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AGILE COMBAT EMPLOYMENT (ACE) READINESS: NECESSARY TRAINING TRANSITIONS FOR AIRFIELD OPERATIONS OFFICERS

by

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This research assesses the readiness of Airfield Operations Officers (13Ms) within the United States Air Force (USAF) for Agile Combat Employment (ACE) challenges. ACE is a strategy that emphasizes agility in the face of dynamic threats through distributed operating locations. In response to evolving global challenges, particularly the increasing military capabilities of near-peer nations, such as the People's Republic of China, the USAF has recognized the need for a fundamental shift in mindset and operational capabilities. ACE demands a shift from traditional basing strategies to a network of smaller, dispersed, potentially contested, degraded, and operationally limited locations, presenting unique challenges. In response to the central research question, how the USAF can better prepare its airfield operations personnel to successfully adapt to the dynamic demands of ACE to defend the nation against adversaries, this study utilized a structured survey and interview approach to evaluate 13Ms' familiarity with ACE, including knowledge, skills, and abilities. It identifies training gaps and shortfalls while providing valuable insights and recommendations to contribute to informed decision-making regarding education, training, and career development within the USAF. Ultimately, this research seeks to ensure that 13Ms are well-prepared to support and execute ACE operations.

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AGILE COMBAT EMPLOYMENT (ACE) READINESS: NECESSARY TRAINING TRANSITIONS FOR AIRFIELD OPERATIONS OFFICERS

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ABSTRACT

This research assesses the readiness of Airfield Operations Officers (13Ms) within the United States Air Force (USAF) for Agile Combat Employment (ACE) challenges. ACE is a strategy that emphasizes agility in the face of dynamic threats through distributed operating locations. In response to evolving global challenges, particularly the increasing military capabilities of near-peer nations, such as the People's Republic of China, the USAF has recognized the need for a fundamental shift in mindset and operational capabilities. ACE demands a shift from traditional basing strategies to a network of smaller, dispersed, potentially contested, degraded, and operationally limited locations, presenting unique challenges. In response to the central research question, how the USAF can better prepare its airfield operations personnel to successfully adapt to the dynamic demands of ACE to defend the nation against adversaries, this study utilized a structured survey and interview approach to evaluate 13Ms' familiarity with ACE, including knowledge, skills, and abilities. It identifies training gaps and shortfalls while providing valuable insights and recommendations to contribute to informed decision-making regarding education, training, and career development within the USAF. Ultimately, this research seeks to ensure that 13Ms are well-prepared to support and execute ACE operations.

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LIST OF ACRONYMS AND ABBREVIATIONS

13M	Airfield Operations Officer
ACE	Agile Combat Employment
AFFORGEN	Air Force Force Generation (model)
AFSC	Air Force specialty code
AO	airfield operations
C2	command and control
CDO	contested, degraded, and operationally limited
CFETP	career field education and training plan
DOD	Department of Defense
FST	follow-on skills training
IST	initial skills training
JADO	joint all-domain operations
LAK	local area knowledge
LZSO	landing zone safety officer
MCA	multi-capable airmen/airman
MOB	main operating base
PRC	People's Republic of China
QTP	qualification training package
RAND	research and development

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EXECUTIVE SUMMARY

This research investigates how the U.S. Air Force can better prepare Airfield Operations Officers (13Ms) to support and execute Agile Combat Employment (ACE) to defend the nation against adversaries. The study finds that while 13Ms are trained for main operating base operations, their preparation for ACE's dynamic, dispersed operations environment is inadequate. It concludes with five recommendations: (1) codify and publish expectations; (2) adapt formalized training programs; (3) develop and integrate holistic and tailored training opportunities; (4) optimize ACE exercise and training frequency; and (5) build and diversify ACE competence through structured mentorship.

ACE and the Unmet Training Needs of Airfield Operations Officers

The USAF's traditional basing strategy is increasingly vulnerable as the People's Republic of China advances its military capabilities, particularly in nuclear and long-range precision strike domains. The adoption of ACE is a strategic response aiming to enhance agility and operational flexibility. However, Airfield Operations officers, vital for combat airpower projection, currently lack training and experience to execute ACE operations, reflected in their limited exposure to ACE concepts and infrequent participation in related exercises or training events.

Research Design

This thesis used a comprehensive three-phased approach to conduct the research presented in this thesis: a review of existing literature, a survey with a self-assessment component and follow-up interviews, and a critical analysis of the findings. A detailed analysis of ACE and its role in modern warfare within the Department of Defense's pivot toward agile global defense and how the USAF is transforming ACE into an operational reality identified a gap in military doctrines and guidance documents for airfield operations officers supporting and executing ACE operations. This analysis led to the incorporation of a survey developed in three phases: design, creation, and distribution, to evaluate the preparedness of airfield operations officers. In addition to gathering

demographic data, the survey, disseminated via email, probed various aspects of the officers' training and knowledge, specifically their familiarity with ACE objectives, enablers, and framework, as well as the frequency of practical ACE application during training events or exercises. The survey also featured self-assessment items that allowed officers to gauge their own level of ACE knowledge, skills, and proficiency. Lastly, the survey sought to identify desired education and training topics that the 13M community believed would be most beneficial to their success in supporting and executing ACE operations. The responses, complemented by follow-up interviews for those desiring further discussion, provided a wealth of data on the effectiveness of current training programs and identified shortfalls in education and training, among other areas needing enhancement. This thorough evaluation of survey feedback proved critical in formulating recommendations to refine the training and readiness of airfield operations officers.

Findings

The findings from the survey analysis revealed that while a majority of airfield operations officers reported familiarity with ACE, there was still a significant knowledge gap within the community. ACE education and training primarily occurred on the job, presenting an opportunity to formalize ACE doctrine into the 13M training pipelines. Furthermore, varying degrees of confidence and proficiency were identified among officers, indicating a need for targeted training initiatives. Additionally, the application of ACE knowledge among Airfield Operations officers varied, with a significant number reporting infrequent or no application. Frequent hands-on experience was found to be crucial for proficiency. Respondents expressed a demand for role clarity, tailored training programs, and a consistent understanding of 13M officer roles across commands.

Recommendations

This research concludes that significant gaps in ACE education, training, and experience exist among airfield operations personnel and presents a compelling case for transforming education and training for airfield operations officers. To transform these insights into actionable strategies, this thesis concludes with five strategic recommendations that advocate for published role expectations, formalized ACE training

programs, integrated holistic and tailored training opportunities, optimized exercises and training events, and a structured mentorship program. Each recommendation is aimed at equipping airfield operations officers with the knowledge, skills, abilities, and support necessary to excel in supporting and executing ACE operations. A preview of three of the five recommendations that could be implemented immediately is listed below.

1. Recommendation for Immediate Implementation: Codify and Publish Expectations

Implementation Strategy: Establish a dedicated committee to develop and revise applicable ACE doctrines, the Air Force Manual 13–204 series, and 13MX CFETP. Dissemination is critical to ensuring these guidelines are readily accessible by all airfield operations officers.

2. Recommendation for Immediate Implementation: Adapt Formalized Training Programs

Implementation Strategy: Collaboration between career field leaders, instructors, and training curriculum developers to adapt and revise formalized training programs curriculum, mandatory training requirements, and measures of performance. Collaborate with subject matter experts to develop and integrate the previously mentioned training elements into all formalized training, with clear milestones, objectives, and measures of performance for each phase.

3. Recommendation for Immediate Implementation: Develop and Integrate Holistic and Tailored Training Opportunities

Implementation Strategy: Establish two teams; one team to develop the curriculum of ACE modules and another to identify technical and tailored training courses that should be prioritized and mandated as requisites for specific assignments. Both teams should identify a way to track officers' progress in ACE proficiency and codify it for implementation.

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I. INTRODUCTION

In response to evolving global challenges, particularly the increasing military capabilities of near-peer nations such as the People's Republic of China (PRC), the United States Air Force (USAF) has recognized the imperative for a fundamental shift in mindset and operational capabilities. In order to succeed in conflict against the PRC, the USAF has adopted a strategy of agility through the Agile Combat Employment (ACE) concept. This projection shift has become necessary due to the PRC's unprecedented expansion and modernization of its People's Liberation Army. While the PRC has made significant advancements across various military domains, the USAF is particularly concerned about the rapid growth of the PRC's nuclear capabilities and long-range precision strike capabilities. These advancements pose a substantial challenge to the USAF's traditional basing strategy, which relies heavily on main operating bases to maintain airpower in contested, degraded, and operationally limited environments.

While the USAF has always had complete air dominance, now, due to the PRC's capabilities, the USAF finds itself revisiting a historical context akin to World War II, where we confront new challenges and adapt our approach accordingly. As the USAF confronts these challenges posed by the PRC's advancements, the critical importance of airfield operations (AO) becomes increasingly evident. Achieving the USAF's mission to deliver airpower anytime, anywhere relies heavily on the foundational AO capabilities, where air traffic control, airfield management, and radar, airfield, and weather systems converge to form the essential backbone of airpower projection and operate the airfield.

Only four Air Force Specialty Codes (AFSCs) are trained to perform AO duties both at home and in contingency settings, and it is the responsibility of Airfield Operations Officers (13Ms) to lead these AO functions. The airfield environment serves as the paramount 'air' power projection platform. Therefore, the pressing question is: How can the USAF better prepare its airfield operations officers to successfully adapt to the dynamic demands of ACE in order to ensure national security and military readiness?

A. BACKGROUND

Today, the United States faces adversaries equipped with precision-guided weapons, such as advanced missiles, hypersonic glide vehicles, and bunker-busting munitions. These weapons have the capability to penetrate even hardened bases and facilities.[1] Given this reality, investing in fortifying infrastructure to protect U.S. forces and assets in the Pacific theater proves to be cost-ineffective. The PRC modernized its capabilities and proficiencies across all warfare domains, enabling it to conduct a comprehensive range of land, air, and maritime operations as a joint force.[2] This transformation prompted the USAF to adopt an "accelerate change or lose" approach, recognizing the need for rapid adaptation.[3] Complex geopolitical landscapes, resource constraints, and other competing objectives led the USAF to adopt a light, lean, agile force posture known as Agile Combat Employment (ACE).

From an airfield operations lens, ACE demands diverge dramatically from the current airfield operations community's agility, posture, protection, and command and control. Airfield Operations Officers are organically organized, trained, and equipped to conduct operations at main operating base locations to support flying operations where access, basing, and overflight procedures are established. Additionally, air traffic control and landing systems and associated equipment at main operating bases, such as navigational aids, are established and fixed in nature. ACE fundamentally differs by shifting operations from centralized physical infrastructures to a network of smaller, scattered locations.[4] Senior leaders within the USAF responsible for the airfield

[1] Kelly M. Sayler, *Hypersonic Weapons - Background and Issues for Congress*, CRS Report No. R45811 (Washington, DC: Congressional Research Service, February 13, 2023), https://www.proquest.com/docview/2565421096/citation/9E911F4AA2D14011PQ/1.

[2] "DOD Report Details Chinese Efforts to Build Military Power," Department of Defense, accessed October 20, 2023, https://www.defense.gov/News/News-Stories/Article/Article/3562442/dod-report-details-chinese-efforts-to-build-military-power/https%3A%2F%2Fwww.defense.gov%2FNews%2FNews-Stories%2FArticle%2FArticle%2F3562442%2Fdod-report-details-chinese-efforts-to-build-military-power%2F.

[3] Charles Q. Brown, *Accelerate Change or Lose* (Washington DC: U.S. Air Force, August 2020), https://www.af.mil/Portals/1/documents/2020SAF/ACOL_booklet_final_13_Nov_1006_WEB.pdf.

[4] U.S. Air Force, *Agile Combat Employment*, AFDN 1-21 (Washington, DC: Curtis E. LeMay Center for Doctrine Development and Education, 2022), https://www.doctrine.af.mil/Operational-Level-Doctrine/AFDN-1-21-Agile-Combat-Employment/.

operations career field have recognized the imperative for a fundamental shift in mindset, organizational structure, training, and equipment. Simultaneously, airfield operations officers have articulated an increased workload and expanded responsibilities, such as command and control, transitioning to adaptive basing, rapidly mobilizing in small agile teams, and initiating innovative solutions for outdated equipment.

B. DEFINITION OF AGILE COMBAT EMPLOYMENT (ACE)

ACE is defined as "a proactive and reactive operational scheme of maneuver executed within threat timelines to increase survivability while generating combat power."[5] Specifically, ACE leverages a hub-and-spoke system of well-established and austere bases and facilities to minimize losses in the event an adversary's precision-guided weapon hits one. Despite some limitations, ACE and the use of dispersed operating locations can complicate adversary planning and hold targets at risk from multiple defensible and sustainable locations that are lean, agile, and easily relocatable.[6]

C. THE ROLE OF AIRFIELD OPERATIONS (AO)

The USAF depends on the AO community comprised of officers and enlisted personnel to manage airfields, control air traffic, and provide radar, airfield, and weather systems services for deployed and in-garrison operations during peacetime and contingencies. With the growing responsibilities of ACE, the AO actively seeks solutions to address the complex challenges that ACE creates. "To generate combat power from a number of locations to create dilemmas for an adversary… I just need a runway, a ramp," General Q. C. Brown said at a 2019 Air Force Association conference. AO must be prepared for the worst every time and execute ACE perfectly, every time.[7] The assumption of readily available and operational airfields can be precarious; therefore, AO

[5] U.S. Air Force, 1.

[6] U.S. Air Force, 4.

[7] "Brown Highlights Progress in Addressing Great Power Competition," 5th Air Force, September 26, 2019, https://www.5af.pacaf.af.mil/News/Article-Display/Article/1973002/brown-highlights-progress-in-addressing-great-power-competition/https%3A%2F%2F.

must be an integral part of the planning process, emphasizing the need for Airfield Operations Officers to be properly organized, trained, and equipped for their vital role.

D. RESEARCH STATEMENT AND RESEARCH QUESTION

While airfield operations officers (13Ms) are prepared for operations at main operating bases equipped with fixed navigational aids, established infrastructure, and standard operating procedures, they often lack the requisite experience and training to meet the dynamic expeditionary demands of ACE in the Pacific region. ACE entails the redistribution of theater-assigned forces, follow-on forces, and equipment from six well-established, developed, and enduring locations to potentially austere, contested, degraded, and resource-constrained environments. This shift necessitates a unique skill set and adaptability not traditionally emphasized in 13Ms' training and requires a deliberate focus on cultivating these capabilities.

Though ACE was signed into USAF doctrine in 2021 and subsequently operationalized, the AO community appears to be in the early phases of publishing clear guidance and expectations for 13Ms.[8] Therefore, this research aims to answer the question: **How can the USAF better prepare its airfield operations personnel to successfully adapt to the dynamic demands of ACE in order to ensure national security and military readiness?**

E. SIGNIFICANCE

The significance of this research lies in its timely response to a critical need within the USAF and the broader national security context. In a rapidly changing global landscape characterized by geopolitical challenges, the adoption of a more agile force posture known as ACE is a strategic imperative. While ACE is essential for enhancing survivability and operational flexibility, it poses unique challenges for 13Ms who are traditionally trained for operations at main operating bases.

[8] "CSAF Signs Agile Combat Employment Doctrine Note," Air University (AU), December 14, 2021, https://www.airuniversity.af.edu/News/Display/Article/2873496/csaf-signs-agile-combat-employment-doctrine-note/ https%3A%2F%2Fwww.maxwell.af.mil%2FNews%2FDisplay%2FArticle%2F2873496%2Fcsaf-signs-agile-combat-employment-doctrine-note%2F.

The USAF's announcement of its shift to ACE in 2017 marked a pivotal moment in adapting to evolving security challenges.[9] Since then, ongoing efforts have been made to define, codify, integrate, and execute ACE effectively throughout the Pacific region. In December 2021, through the formalization of ACE in Air Force Doctrine Note 1–21, Agile Combat Employment, then Air Force Chief of Staff Gen. Charles Q. Brown Jr. acknowledged that ACE is an iterative process driven by invaluable feedback from airmen.[10] As the USAF prepares for the execution of ACE in contested environments and to avoid a situation "where our adversary does something we didn't expect," the need for a well-educated, trained, and experienced AO community cannot be overstated.[11]

Furthermore, this research addresses a significant gap in the assessment of current airfield operations officers' education, training, and experience levels within the context of ACE. The assessment data and analysis generated by this research have the potential to contribute invaluable insights and practical implications for USAF leaders, Indo-Pacific and Pacific Air Forces staff, and airfield operators. These insights serve as a foundation for enhancing the AO community, equipping it with the necessary skills and capabilities to excel in supporting and executing ACE. By addressing these critical gaps, the research aims to bolster the AO community's effectiveness and its pivotal role in enabling the USAF to project and sustain airpower in the dynamic and contested environments of the modern era.

F. APPROACH

The core of this study centers on a carefully crafted anonymous survey and is driven by two primary objectives, detailed in the next chapter. First, it aims to address a significant knowledge gap related to the role of 13Ms within the ACE framework. This gap includes the absence of specific guidance, education, and training requirements.

[9] Maj Scott D. Adamson and Maj Shane "Axl" Praiswater, "With Air Bases at Risk, Agile Combat Employment Must Mature," Defense News, November 12, 2020, https://www.defensenews.com/opinion/commentary/2020/11/12/air-bases-are-at-risk-without-the-agile-combat-employment-approach/.

[10] Greg Hadley, "Brown: Air Force May Never 'Slap the Table,' Finish Iterating ACE," Air & Space Forces Magazine, September 27, 2022, https://www.airandspaceforces.com/brown-air-force-may-never-slap-the-table-on-ace/.

[11] Hadley, 2.

Second, it is geared towards enhancing the readiness and preparedness of 13Ms to meet the ever-evolving demands of ACE operations effectively.

G. ORGANIZATION OF REPORT

This report proceeds with six distinct chapters, each contributing to a comprehensive understanding of the research. The next chapter, Chapter II, explores relevant literature encompassing peer-reviewed and scholarly articles, government sources, and research studies regarding the USAF, ACE, and the AO community. Chapter III delves into the research methodology, survey development, and distribution process. Chapter IV presents an analysis and discussion of the findings obtained from the collected data, shedding light on critical insights. Chapter V outlines informed recommendations formulated from the research's findings, offering actionable suggestions for enhancing the 13M role in ACE. Chapter VI, the final chapter, summarizes the key takeaways, provides a conclusive overview, and identifies potential avenues for further research and exploration.

H. SUMMARY

This chapter introduced the research, emphasizing the need for a fundamental shift in mindset and operational capabilities within the USAF due to evolving global challenges and the adoption of ACE. It highlighted the pivotal role of Airfield Operations Officers in adapting to ACE's dynamic demands and posed the central research question: How can the USAF better prepare its airfield operations officers (13Ms) to successfully adapt to the dynamic demands of ACE in order to ensure national security and military readiness? The next chapter, Chapter II, will delve into relevant literature, providing a comprehensive understanding of the USAF, ACE, and the AO community and establishing the groundwork for our analysis and recommendations.

II. LITERATURE REVIEW AND APPROACH: UNDERSTANDING ACE'S VITAL ROLE IN MODERN WARFARE

The 2018 National Defense Strategy acknowledges the "re-emergence of long-term, strategic competition by…revisionist powers," like the PRC, posing a challenge to the U.S. military's historical advantage.[12] As the strategic landscape evolves, particularly with the PRC identified as a primary "pacing challenge" and deterrence remaining a top priority for the U.S., this literature review underscored the relevance of ACE in projecting and sustaining airpower in contested environments.[13] A singular recurring theme conveys a strong message that modern warfare does not guarantee the same uncontested air superiority the U.S. has been accustomed to. This new reality requires the ability to operate successfully in contested, degraded, and operationally limited (CDO) environments, which demands increased coordination across joint all-domain operations.[14]

It should not be surprising that the emerging common themes surround force posture, contested logistics, distributed operations, and multi-capable airmen concepts, which highlight ACE's advantages or challenges. While these themes are important, ACE's technical aspects and operational effectiveness do not make a strong foundation to prepare USAF personnel for execution. Surprisingly little focus has been placed on the crucial role of airfield operations personnel. More specifically, the education, training, or equipment required for airfield operations officers to conduct ACE operations successfully, uncovering the need to address the essential role of AO in ACE. The following three sections, summarized at the end, focus on the ACE, the DOD, the USAF, and the AO community.

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[12] Department of Defense, *Summary of the 2018 National Defense Strategy of the United States of America: Sharpening the American Military's Competitive Edge* (Washington, DC: Department of Defense, 2018), 2.

[13] Joseph R. Biden Jr., *National Security Strategy* (Washington, DC: The White House, 2022), 20, https://www.whitehouse.gov/wp-content/uploads/2022/10/Biden-Harris-Administrations-National-Security-Strategy-10.2022.pdf.

[14] U.S. Air Force, *Department of the Air Force Role in Joint All-Domain Operations (JADO)*, AFDP 3-99 (Maxwell AFB, AL: Curtis E. LeMay Center for Doctrine Development and Education, 2021), https://www.doctrine.af.mil/Doctrine-Publications/AFDP-3-99-DAF-Role-in-Jt-All-Domain-Ops-JADO/.

A. AGILE COMBAT EMPLOYMENT: BEYOND THEORY, A STRATEGIC REALITY AND OPERATIONAL NECESSITY

ACE represents more than just a philosophical concept within the USAF; it has evolved into a practical and operational scheme of maneuver that is being actively implemented and integrated into the way the USAF conducts its missions.[15] At its core, ACE is a strategic and operational framework designed to enhance the USAF's ability to project and sustain airpower in diverse and contested environments.[16] The term "ACE" refers to the USAF method of conducting operations that stray from projecting combat airpower from traditional operating bases overseas and focuses on launching, recovering, and maintaining aircraft from several forward operating locations while heavily relying on allies and partners. ACE is supplemented and sustained by reach back capabilities from in-garrison forces and pre-positioned theater assets.

ACE is grounded in the understanding that a paradigm shift in military operations is necessary because future conflict has moved away from conventional strategies of uncontested air superiority. The Chief of Staff of the USAF present six pivotal drivers for transformation: "The Air Force Force Generation Model (AFFORGEN), ACE, mission command, Wing A-Staff construct, multi-capable airmen (MCA), and integrated by design."[17] Supported by a functional Wing A-Staff, small teams of MCA are empowered through mission command authority and training designed to integrate with allies and partners to conduct ACE operations.[18] The implementation of these six drivers will enable a flexible, ready, resilient, responsive, and synchronized force capable of meeting evolving strategic challenges.

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[15] Secretary of the Air Force Public Affairs, "Air Force Operationalizes ACE Concept, Addresses Today's Changing Threat Environment," U.S. Air Force, June 23, 2022, https://www.af.mil/News/Article-Display/Article/3072831/air-force-operationalizes-ace-concept-addresses-todays-changing-threat-environm/.

[16] Department of the Air Force, *The Air Force*, AFDP-1 (Washington DC: U.S. Air Force, 2021), 1, https://www.doctrine.af.mil/Portals/61/documents/AFDP_1/AFDP-1.pdf.

[17] Sandeep Mulgund, "Driving Change in the Presentation and Employment of Airpower," Air University: Wild Blue Yonder, February 3, 2023, 1, https://www.airuniversity.af.edu/Wild-Blue-Yonder/Article-Display/Article/3288220/driving-change-in-the-presentation-and-employment-of-airpower/.

[18] Mulgund, 1.

Within the USAF and the larger DOD, ACE holds profound strategic importance as the U.S. faces pacing challenges from nations such as China, as stated in the 2022 National Defense Strategy.[19] The One Belt, One Road initiative, Chinese expansionism in strategic areas, and China's efforts to undermine the international rules-based order all pose serious threats to American interests. ACE emerges as a critical strategy to ensure the USAF's capacity to project and sustain airpower in such a dynamic security environment. Looking ahead as security challenges evolve, the significance of ACE's is expected to grow and adapt to meet future demands, requiring continuous innovation and readiness.

B. DEPARTMENT OF DEFENSE: PIVOTING FOR AGILE GLOBAL DEFENSE

The Department of Defense (DOD) operates within a dynamic global security landscape, necessitating agility and adaptability in its defense posture. A 2013 RAND study highlighted the importance for the DOD to become more agile in its global defense posture, particularly as it pivots towards Asia.[20] The shift emphasizes the need to focus on 'places, not bases' and align forces with strategic objectives while creating resiliency and redundancy. Achieving decisive dominance in the contemporary operational environment is paramount for the DOD, with an emphasis on Joint All Domain Operations (JADO) enabling capabilities and service integration. However, there is a notable lack of clarity and potential confusion surrounding the implementation of this concept, according to the RAND assessment earlier this year.[21] The concept of achieving agility and readiness is not unique to the DOD alone; it resonates across the services of the U.S. military. For instance, the U.S. Army employs the Multi-Domain Operations

[19] Department of Defense, *National Defense Strategy of the United States of America* (Washington, DC: Department of Defense, 2022), https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-National-Defense-Strategy-NPR-MDR.pdf.

[20] Stacie L. Pettyjohn and Alan J. Vick, *The Posture Triangle: A New Framework for U.S. Air Force Global Presence*, RR-402-AF (Santa Monica, CA: RAND, 2013), https://www.rand.org/pubs/research_reports/RR402.html.

[21] Timothy Marler et al., *Assessment of Joint All Domain Command and Control Requirements and the Use of Live, Virtual, and Constructive Capabilities for Training*, RR-A985-2 (Santa Monica, CA: RAND, 2023), https://doi.org/10.7249/RRA985-2.

concept, the U.S. Marine Corps leverages Expeditionary Advanced Base Operations, and the U.S. Navy emphasizes Distributed Maritime Operations, each intending to ensure readiness in the face of evolving threats.[22]

The FY23 budget reflects the DOD's commitment to regional readiness, specifically in the Indo-Pacific, with a significant allocation of $6.1 billion under the Pacific Deterrence Initiative.[23] Should the FY24 budget request be approved, the Indo-Pacific theater could receive as much as $9.1 billion under the Pacific Deterrence Initiative.[24] This allocation signals the DOD's dedication to enhancing its regional capabilities. However, it is worth noting that while targeted funds for exercises, training, experimentation, and innovation are explicitly mentioned, funding for airfield operations is notably absent. Conversely, substantial sums are allocated to specific areas within the broader allocation of $137.7 billion for joint force readiness, including $35.5 billion for USAF readiness, $9.7 billion for Special Operations Command readiness, and $5.6 billion to joint capabilities.[25] These allocations highlight a potential gap in deliberate fiscal investment in airfield operations capabilities, which could impact the ability to address the requisite education and training needs of the AO community.

C. UNITED STATES AIR FORCE: TRANSFORMATION OF ACE INTO OPERATIONAL REALITY

Since 2018, the USAF has embarked on a deliberate shift toward ACE under the visionary leadership of General Charles Brown, then-Chief of Staff. This strategic transformation signifies the need to move away from the traditional fixed base mindset to embrace ACE—an approach with an iterative approach that builds on itself as tactics,

[22] Dmitry Filipoff, "Fighting DMO, Pt. 1: Defining Distributed Maritime Operations and the Future of Naval Warfare," Center for International Maritime Security, February 20, 2023, https://cimsec.org/fighting-dmo-pt-1-defining-distributed-maritime-operations-and-the-future-of-naval-warfare/.

[23] Lloyd J. Austin III, "The Department of Defense Releases the President's Fiscal Year 2023 Defense Budget," Proquest, March 28, 2022, https://www.proquest.com/docview/2645320670/citation/74D8BB286F554318PQ/1.

[24] Lloyd J. Austin III, *Defense Budget Overview: United States Department of Defense Fiscal Year 2024 Budget Request* (Washington, DC: Department of Defense, March 2023), 3–2, https://comptroller.defense.gov/Portals/45/Documents/defbudget/FY2024/FY2024_Budget_Request_Overview_Book.pdf.

[25] Austin III, "DOD Fiscal Year 2023 Defense Budget."

techniques, and procedures are operationalized.[26] The strategic evolution to ACE is rooted in recognition of the changing dynamics of modern warfare and the necessity for adaptability and responsiveness. General Kenneth Wilsbach, Commander of Pacific Air Forces, emphasized the urgency of this transition, citing the actions of nations like China, which have expanded and asserted their influence in a manner that challenges the international rules-based order and the concept of a Free and Open Indo-Pacific.[27] He further directed his forces "to challenge China and Russia Every. Single. Day," acknowledging the need to remain vigilant in a rapidly evolving security environment.[28]

Additional research studies within the USAF echoed the need for adaptability, emphasizing the importance of an adaptable command and control structure. These studies underscored the significance of adequately training and equipping units, that such investments will lead to enhanced integration.[29] This emphasis on adaptability and readiness resonates across the spectrum of the U.S. military and could be critical for effective JADO.

On December 9, 2021, then-Air Force Chief of Staff General Charles Q. Brown codified the service's first ACE operational doctrine, known as Air Force Doctrine Note 1–21, *Agile Combat Employment*.[30] This doctrine is a guiding light for Airmen, encouraging them to embrace innovation and generate best practices, especially as the possibility of contested environments looms.[31] Notably, it recognizes the pivotal role airfield operations personnel play in enabling power projection from various defensible locations, even in the face of threats to airfields. As many USAF senior leaders have

[26] Patrick Reardon, "Watch, Read: Gen. Charles Q. Brown Jr. on The State of the Air Force," *Air & Space Forces Magazine* (blog), September 26, 2022, https://www.airandspaceforces.com/watch-read-gen-charles-q-brown-jr-on-the-state-of-the-air-force/.

[27] Hailey Haux, "PACAF Commander Talks ACE at AFA's Air, Space, Cyber Conference," U.S. Indo-Pacific Command, Public Affairs, September 21, 2021, https://www.pacom.mil/Media/News/News-Article-View/Article/2783280/pacaf-commander-talks-ace-at-afas-air-space-cyber-conference/.

[28] Haux, 1.

[29] Jeffrey Hukill et al., Air Force Command and Control, The Need for Increased Adaptability (Maxwell AFB, AL: Air Force Research Institute, Air University Press, 2015).

[30] Air University, "CSAF Signs Agile Combat Employment Doctrine Note."

[31] Air University, "CSAF Signs Agile Combat Employment Doctrine Note."

noted, ACE is a way to respond effectively to evolving threats, maintaining a strategic advantage, and ensuring the USAF's ability to project and sustain airpower.[32] ACE is no longer just a goal; it has become an integral part of USAF training and operations.

Traditionally, airfields have been regarded as safe havens for U.S. and coalition forces, providing an uncontested asymmetric advantage. Power projection from dispersed locations, potentially austere airfields, requires a unique skill set that is not traditionally emphasized in AO community training and requires a deliberate focus on cultivating these capabilities. The next section focuses on the vital role of the AO community in implementing ACE and supporting the USAF's mission.

D. WHAT DIRECTIVES OR GUIDANCE ARE AVAILABLE FOR THE AIRFIELD OPERATIONS COMMUNITY?

Despite the significance of ACE within the USAF, the literature review reveals a notable gap concerning the role of airfield operations personnel, including their specific education and training requirements within the ACE framework. While existing training plans, career development guides, and codified duties and responsibilities have provided foundational skills training for airfield operations officers, these resources predominantly focus on initial skills competencies in airfield management and air traffic control.[33] Importantly, there are no Air Force Instructions (AFIs), Operating Instructions (OIs), or checklists for 13Ms to follow regarding ACE operations, raising questions about the systemic integration of AO into ACE strategies and operations.

The dearth of doctrine, the AO's role in joint operations, formal training guidance, and expectations, among others, demonstrate the pressing need for further research and attention within this community. It highlights the urgency of exploring AO's potential to enhance ACE operations, emphasizing the immediate implications of augmenting their role in ACE. Beyond operational efficiency, the implications extend to

[32] Haux, "PACAF Commander Talks ACE."

[33] Department of the Air Force, *Airfield Operations*, AFMAN 13-204, Volume 3 (Washington DC: Department of the Air Force, 2020), https://static.e-publishing.af.mil/production/1/af_a3/publication/afman13-204v3/afman13-204v3.pdf; U.S. Air Force, *Airfield Operations Officer: Career Field Education and Training Plan (CFETP), Part I and II*, AFSC 13MX (Washington DC: Department of the Air Force, 2021), https://static.e-publishing.af.mil/production/1/af_a3/publication/cfetp13mx/cfetp13mx.pdf.

broader national defense and security. Strengthening the USAF's ability to project and sustain airpower, particularly in diverse and contested environments, such as the Indo-Pacific region, hinges on recognizing the indispensable contributions of AO to ACE. The critical contributions of AO to ACE remain largely underexplored and highlight the need for further research and attention. The potential and immediate implications of enhancing AO's role in ACE warrant serious consideration. These implications extend beyond operational efficiency to encompass broader national defense and security aspects, strengthening the USAF's ability to project and sustain airpower in diverse and contested environments, particularly in the Indo-Pacific region.

E. KEY TAKEAWAYS IN ACE'S PARADIGM SHIFT

A consistent theme resonates around ACE: first, future conflict no longer guarantees uncontested air superiority, necessitating a paradigm shift to the ACE scheme of maneuver. Secondly, there is a critical gap regarding the role of airfield operations personnel, particularly the 13Ms, including specific guidance, education, and training requirements within the ACE framework. The next section will delve into the methodology and approach used in this study to address the critical question of how the USAF can better prepare its airfield operations personnel to successfully adapt to the dynamic demands of ACE in order to ensure national security and military readiness.

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III. METHODOLOGY

The previous sections addressed a significant knowledge shortfall regarding the airfield operations officer's role within the ACE framework. This knowledge shortfall, whether in doctrine, Air Force Instructions, Operating Instructions, or otherwise, encompasses the absence of specific guidance, education, and training requirements necessary to equip 13Ms with competencies essential for success in the ACE environment. This chapter now shifts its focus towards the approach employed to enhance the readiness and preparedness of 13M officers to meet the dynamic demands of ACE. Subsequent sections delve into the methodology and approach employed in this study, laying a solid foundation for addressing the central research question: How can the USAF better prepare its airfield operations personnel to successfully adapt to the dynamic demands of ACE in order to ensure national security and military readiness? The methodology for this research was meticulously designed to gather comprehensive insights into 13M's readiness for ACE operations, offering a detailed account of survey development and administration, the sampling procedure, content analysis, ethical considerations, data analysis, and limitations.

A. SURVEY DEVELOPMENT AND ADMINISTRATION

The survey questions used in this research (APPENDIX A) were developed following a structured approach comprising three phases: design, creation, and distribution of a set of questions via email. The primary objective was to assess the readiness of the 13M officers in the USAF. The survey aimed to gather information on their knowledge, training, and effectiveness across various phases of the AO training pipeline, specifically focusing on their readiness for ACE and ACE-like operations. The survey evaluated familiarity with ACE, including its purpose, objectives, enablers, and framework. Additionally, it assessed the extent of formal and informal ACE training or skills that individual 13M officers had received and the frequency of applying ACE concepts during exercise or training events. Moreover, the survey included self-assessment questions where participants could evaluate their individual level of ACE

knowledge and skills. It also inquired about training, education, and elements of the ACE framework that respondents believe would most benefit their role in airfield operations.

Subsequently, feedback from the survey respondents was analyzed to extract valuable insights from their experiences and knowledge. Telephone interviews with participants who desired a follow-up discussion were useful to garner additional perspectives. These insights served as the foundation for informing decision-making and identifying potential avenues through which the USAF could enhance the preparation and training of 13M officers. The ultimate goal is to ensure their successful adaptation to the dynamic demands of ACE, thus contributing to national security and military readiness. The survey analysis will play a pivotal role in making informed decisions regarding the education, training, and career development of 13M Airfield Operations Officers within the USAF.

B. SURVEY OBJECTIVES

1. Determine the level of initial familiarity among 13M officers with ACE, including its purpose, objectives, enablers, and framework as described in AFDN 1–21.[34]

2. Measure the effectiveness of education and training provided to 13M officers in each phase of the AO career field training pipeline (according to the 13M CFETP), which includes Initial Skills Training (IST), Follow-on Skills Training (FST), Proficiency Training, and Development Training.[35]

3. Identify any gaps or vulnerabilities in the training pipeline related to ACE operations, with a focus on areas where officers may require additional education or training.

[34] U.S. Air Force, *Agile Combat Employment*.

[35] U.S. Air Force, *CFETP 13MX*.

4. Assess the impact of the revisions and updates made to the 13M CFETP in 2021 on the readiness of 13M officers for their duties and career development.

5. Provide data and insights that the career field management team can use to address training deficiencies, improve readiness, and enhance the preparation of new 13Ms for their ACE-related roles.

C. INFORMATION TO BE COLLECTED

1. Respondents' demographic data, including their phase within the AO career field training pipeline and year IST was complete.

2. Individual familiarity, knowledge, and understanding of ACE operations and its components.

3. Self-perceived perceptions of the effectiveness of training received in each phase of the training pipeline.

4. Any identified gaps or vulnerabilities in training related to ACE.

5. Self-assessed training needs and preferences related to ACE.

These survey results will play a crucial role in shaping the training and readiness of 13M's and contribute to the overall success of ACE operations within the USAF.

D. SAMPLING PROCEDURE

The sampling method employed for this survey targeted active duty 13M officers assigned to various entities within the USAF and related organizations. The selected sampling units included personnel assigned to the Headquarters Air Force, Major Commands and numbered Air Force Headquarters, Combatant Command headquarters, and other relevant entities, such as the Air Force Flight Standards Agency, Operations Support Squadrons, Air Traffic Control Squadrons, and Contingency Response Squadrons.

The eligible population for this survey was identified by utilizing two primary sources: the 13M distribution list and the 13M milSuite member list, where an invitation

with survey instructions was extended via email (APPENDIX B).[36] These sources provided a comprehensive and representative pool of 13M officers across various assignments and duty stations. All survey and follow-up interview participants were offered anonymity in their responses and discussions to encourage open and candid responses. This ensured that individuals could express their opinions and experiences without concerns about personal repercussions.

E. BIAS AND LIMITATIONS

While every effort was made to conduct an unbiased survey, it is important to acknowledge potential sources of bias and limitations in this research that may impact the study's findings. These include the possibility of sampling bias, as the sample is not entirely representative of all 13M officers in the USAF, and the exclusion of Air Force Reserve and Air National Guard 13M officers not accessible through the identified distribution lists. Response bias is another consideration. Despite efforts to maintain anonymity, some participants may have hesitated to provide completely candid responses. Additionally, the survey's temporal limitation, conducted within a specific time frame, means that responses may reflect the circumstances and perceptions of participants during that period. The findings are specific to the surveyed population and may not be universally applicable to 13M officers outside the scope of this research or future timelines. The accuracy of responses also depends on the participant's understanding and interpretation of the survey questions. Furthermore, ethical considerations play a role as the study relies on self-reported data, potentially introducing limitations in response accuracy due to participants not disclosing certain information or providing responses aligned with perceived expectations.

F. ETHICAL CONSIDERATION

All required Institutional Review Board procedures of the Naval Postgraduate School were strictly followed before distributing the survey. The survey invitation was facilitated through Qualtrics, an online survey tool. This approach ensured the ethical

[36] milSuite, launched in 2009, is the Department of Defense Enterprise Social Network (ESN).

conduct of research, a substantial sample size, and a structured data collection and analysis process to provide valuable insights into the readiness of 13M officers for ACE operations.

G. SUMMARY

Conducting a survey is necessary to comprehensively assess the readiness of our 13M officers, with the primary objective of uncovering any existing gaps and deficiencies in their education, training, and experiences related to ACE operations. The forthcoming analysis of the survey data will offer a deeper understanding of the readiness of 13M officers and serve as a basis for drawing informed conclusions and formulating actionable recommendations, all aimed at enhancing airfield operations officers preparedness for the dynamic demands of ACE operations.

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IV. FINDINGS AND ANALYSIS

This chapter presents the findings and analysis of the survey aimed at addressing the readiness and preparedness of 13M officers in executing ACE operations. The chapter begins with descriptive statistics encapsulating the essential survey results and participant profiles. Following that, the chapter is divided into distinct sections that delve into various aspects of the survey's findings, including demographics, familiarity with ACE, identification of educational and training gaps, the importance of self-evaluation in modern warfare, and the educational and training requirements for the future of the airfield operations community.

A. SURVEY RESULTS AND PARTICIPANT PROFILE

The survey participation, while less than expected from officers just beginning their Airfield Operations career, was representative of the demographic that would be performing ACE operations. Their insights were largely aligned, emphasizing the need for guidance, formal training, and more opportunities to gain experience, regardless of duty station or location. These unique and valuable perspectives form the basis for conclusions and recommendations presented in the next chapter. Out of 152 invitations sent, the survey garnered responses from 42 participants, resulting in an approximate response rate of 25%. The majority of respondents, accounting for 42%, completed IST between March 2012 and November 2019. In terms of familiarity with ACE, 61% of respondents indicated being 'very familiar,' while 37% reported being 'somewhat familiar.' Regarding their understanding of ACE's purpose and objectives, respondents exhibited an average of moderate to moderately high level of understanding. When asked about ACE enablers, the Multi-Capable Airmen concept was the most familiar to 45% of respondents. Half of the respondents, or 50%, reported acquiring ACE training or skills on the job, whereas 35% reported not having received ACE training or skills. The remaining 15% provided comments highlighted in this chapter's 'Familiarity with ACE' section. A combined total of 63% of respondents indicated they 'rarely' (27.5%) or 'never' (35%) participate in ACE exercises or training events.

Additionally, when asked if they have the necessary knowledge and skills to perform their airfield operations role in ACE effectively, a majority of respondents, accounting for 62.50%, expressed confidence in their abilities, with 37.5% selecting 'Probably Yes' and 25% choosing 'Definitely Yes.' When participants were asked about the type of training or education that would most benefit their 13M role in AO, more technical training was selected by 38% of participants. In the next question, 25% of participants selected movement and maneuver with command and control as a close second (24%) when asked about which elements of the ACE framework they wanted to learn more about. The final open-text question for additional comments regarding ACE and its integrations with AO underscores the importance of clear guidance, expectations, and opportunities for training and development in ACE concepts. Respondents also highlighted the varying levels of ACE adoption across the different major commands and the challenges of implementing ACE in garrison. These results are further interpreted in the following discussion.

B. DEMOGRAPHIC ANALYSIS

Understanding the demographics of survey participants is crucial as a 13M advances through the various phases of the CFETP, accumulating specific knowledge, training, and experience significantly influencing their perspectives on ACE operations and readiness. These individual viewpoints offer valuable insights for analyzing their responses. Therefore, conducting a demographic analysis of the survey participants enables us to understand the distribution of respondents across different stages of their 13M CFETP training.

Two key aspects were examined: the phase of the 13M CFETP and their completion date of IST. The survey gathered responses from 41 participants, representing an approximate response rate of 25%.[37]

[37] Of the 41 responses, 1 participant answered only the first three questions.

1. 13M CFETP Training Phases Matter

The initial survey question asked about the phase of 13M CFETP that respondents are currently in, with response options divided into five categories: IST, FST, Proficiency Training, Development Training, and Other. The distribution of respondents across these training phases is graphically depicted as a pie chart in Figure 1, offering a clear overview of the proportion of respondents in each phase. Notably, based on their comments regarding the 'other' category, the two respondents that selected it should be categorized within the proficiency and development training phases, respectively.

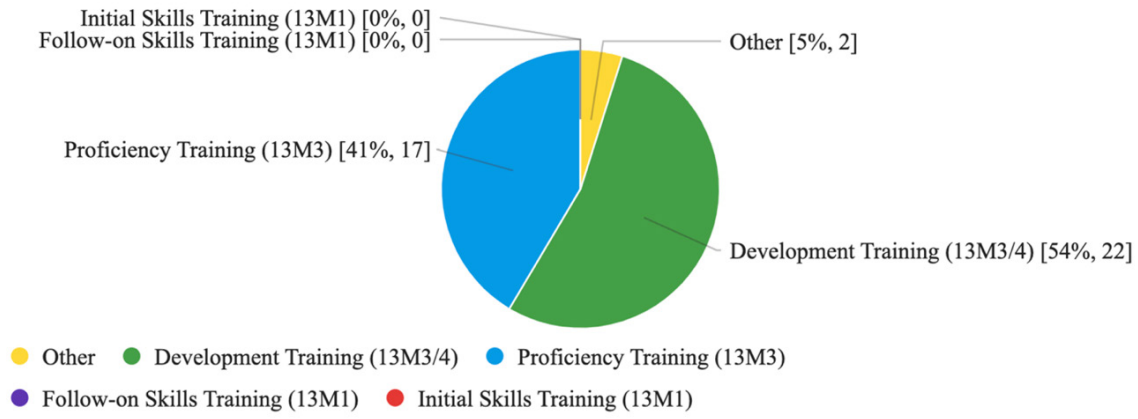

Figure 1. Distribution of respondents across 13M CFETP training phases

Additionally, this demographic distribution raises intriguing questions about whether respondents in different training phases hold distinct perspectives on ACE operations and readiness. Are those in 'Development Training' more inclined to view ACE operations from a strategic or operational standpoint, while those in 'Proficiency Training' focus on tactical aspects? Further analysis will explore these potential correlations between training phases and perspectives. It is evident that the majority of respondents are concentrated in the 'Development Training (13M3/4)' phase, comprising 53.66% of the sample, followed by 'Proficiency Training (13M3)' with 41.46%. This concentration in the development training phase may suggest that a significant portion of the participants are currently in the latter stages of their career, where they have likely accumulated substantial experience and expertise. Only a small percentage of

respondents provided 'Other' phase responses. Interestingly, no respondents selected the IST or FST options. Understanding the distribution of participants across these training phases is crucial for contextualizing and identifying potential correlations or patterns in the survey responses related to training.

2. Training Curriculum Changes over Time

Analysis of the responses to the second question, which asked respondents about the timing of their completion of IST, provides valuable context for interpreting their perspectives on ACE operations and readiness. These responses are visually represented in Figure 2, displaying an overview of the distribution of IST completion dates among survey participants. Most, 42% or 17 respondents, completed IST between March 2012 and November 2019, reflecting a varied distribution across training phases, while 11 participants also completed IST before February 2012. This distribution helps to understand how respondents' training experiences may have been influenced at distinct times, aligning with updates to the CFETP training curriculum. As the CFETP was updated at four distinct times, correlating with the observed completion date clusters, we will explore how these temporal distinctions may impact respondents' perspectives and experiences. This discussion is detailed in the upcoming sections.

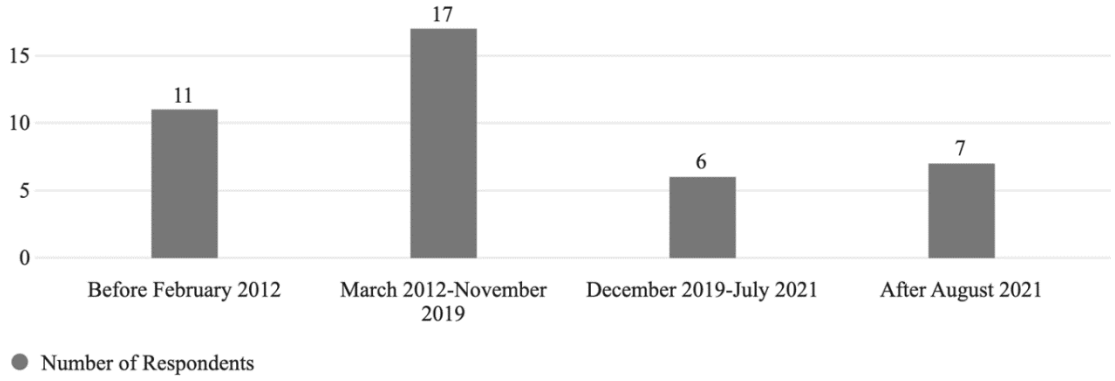

Figure 2. Distribution of IST completion dates

C. UNDERSTANDING 13M SKILL LEVELS, TRAINING REQUIREMENTS, AND CAREER PROGRESSION

A 13M's skill level, training requirements, and career progression are intertwined, like the rungs of a ladder they systematically climb. As they ascend this career ladder, they traverse the proficiency spectrum from 13M1 (entry-level) and 13M3 (fully qualified) to 13M4 (staff officer), perfecting their skills and amassing training experiences.[38] Skills levels are attained by completing required training or granted based on duty position, whereas training requirements can be considered perquisites to earning a skill level or specific duty position. This seamless integration of skill development and training, referred to as the Continuum of Learning, ensures that 13M officers are proficient in their roles and prepared for the leadership and operational responsibilities that lie ahead in their careers.

1. Deliberate CFETP Training Too Focused on Main Operating Bases (MOBs)

While the CFETP is invaluable, its alignment with main operating base (MOB)-centric training can inadvertently limit the preparedness of 13M officers for a wide array of operational scenarios. The CFETP is a comprehensive training manual encompassing 13Ms' life-cycle education, training requirements, support resources, and core tasks. However, a significant issue arises due to the disproportionate emphasis on MOBs within the training and operational aspects of Part I. This focus may inadvertently overlook other critical dimensions of ACE operations and readiness, potentially hindering its alignment with the Air Force's strategic needs. The CFETP is divided into two parts: Part I focuses on the overall management of the 13M specialty, career progression, duties and responsibilities, and qualifications, among other necessary information.[39] While this is foundational in nature, it often leans heavily toward training and operational aspects associated with MOBs. Part II, on the other hand, contains a training course index, available support materials, training standards and references for initial qualification, and

[38] According to the 13MX CFETP, dated Aug 2, 2021, the 13M2 "intermediate" skill level is not used. U.S. Air Force, CFETP 13MX, 10,13.

[39] U.S. Air Force, *CFETP 13MX*.

any major command-specific requirements. 13M officers are encouraged to complete these requirements to obtain skill levels and advance in their careers.

This roadmap of progression and skill levels from an entry-level 13M1 through a qualified 13M3 includes Initial Skills Training (13M1), Follow-on Skills Training (13M1), Proficiency Training (13M3/4), and Development Training (13M3/4) (Figure 3). The 13M4 designator is typically only used while a 13M fulfills a joint, headquarters, or major command staff level assignment and is not reflected in Figure 3. To produce officers capable of meeting the diverse operational needs of the Air Force, the 13M community acknowledges that the education and training journey extends beyond IST and FST.

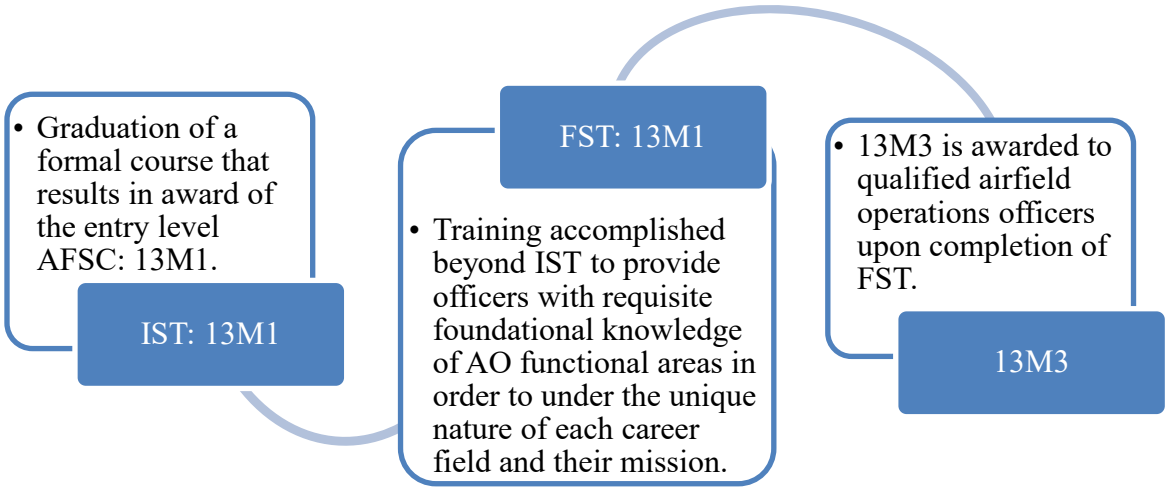

Figure 3. 13M skill level progression

Rather, it is a continuum of learning, depicted in Figure 4. Airfield operations officers are strongly encouraged to engage in the continuum of learning at various points in their careers to enhance their expertise and capabilities within the field. This commitment to lifelong learning is essential for airfield operations officers to adapt, excel, and lead as their careers progress, regardless of whether they serve at MOBs or other locations. Considering the distribution of training phases, there are opportunities to

tailor ACE education, training, and experiences to the specific needs of individuals at different career stages. For those who completed training before February 2012, there may be a need for refresher courses or advanced training.

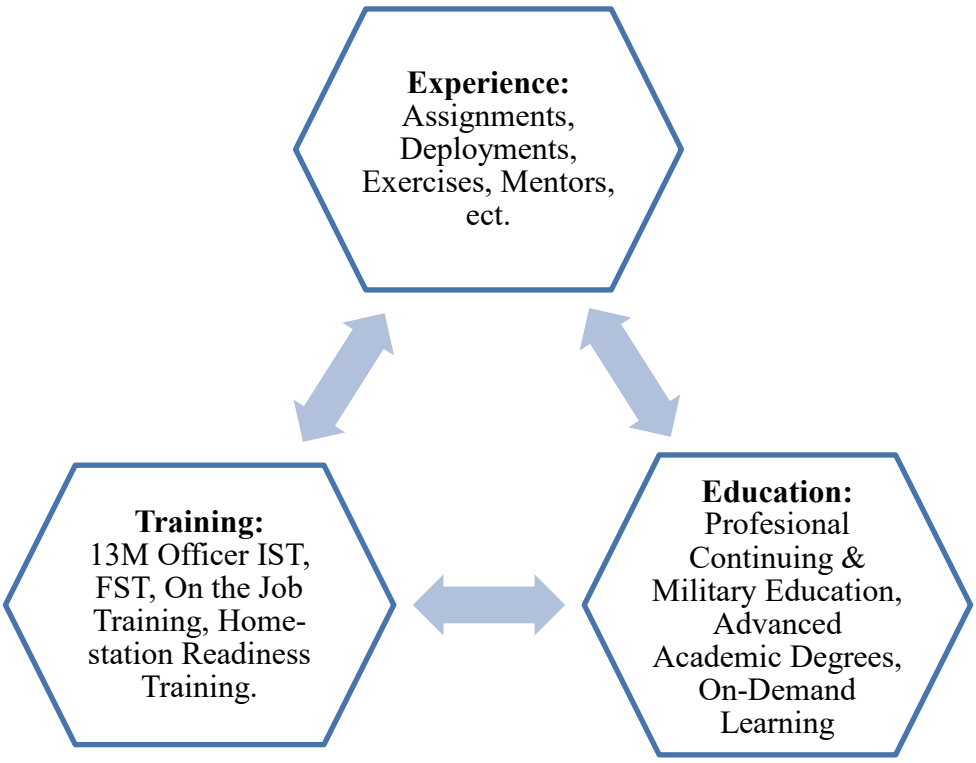

Figure 4. Continuum of learning[40]

In summary, while the CFETP is an essential resource, its strong emphasis on MOB-centric training may unintentionally restrict the readiness of airfield operations officers to handle a diverse range of operational scenarios not limited to ACE. Embracing the continuum of learning and adjusting the CFETP to provide a more balanced skill set will help ensure that airfield operations officers are well-equipped to succeed in any assignment. Subsequent sections explore the survey responses, considering how demographic factors, such as respondents' training phases within the 13M CFETP and IST completion dates, may influence their perspectives on ACE. Specifically, it explores

[40] Adapted from U.S. Air Force, 12.

whether there are discernable response trends based on these demographics. For example, do airfield operations officers who completed IST after August 2021 have different views on ACE than those who completed it before February 2012? By establishing these connections between demographics and responses, we aim to provide a more comprehensive understanding of the factors shaping the survey results and their implications for airfield operations officer preparedness for ACE operations.

D. FROM FAMILIARITY TO KNOWLEDGE GAPS

To gauge the baseline familiarity of ACE within the AO community, participants were asked to assess their initial level of familiarity with ACE, followed by their level of familiarity with ACE's purpose, objectives, enablers, and framework. The survey data reveals valuable insights into the knowledge landscape among the respondents, which is key to identifying knowledge gaps or other areas requiring a more deliberate focus.

1. Interplay of IST Completion and ACE Familiarity: Highs and Lows

Among the survey respondents, a significant majority, constituting 61% (25 individuals), reported that they are 'very familiar' with ACE, compared to 37% (15 participants) who indicated being 'somewhat familiar.' A smaller proportion, just 2% (1 respondent), specified that they are 'not familiar' with ACE (Figure 5). This distribution highlights a substantial portion of respondents with significant familiarity and a minor subset requiring more comprehensive education on ACE. Even a single respondent unfamiliar with ACE can be seen as a potential representation of a broader knowledge gap within the 13M community and should not be disregarded. Further exploration of these findings can help pinpoint specific knowledge gaps to guide targeted strategies to increase ACE awareness and comprehension among the AO community.

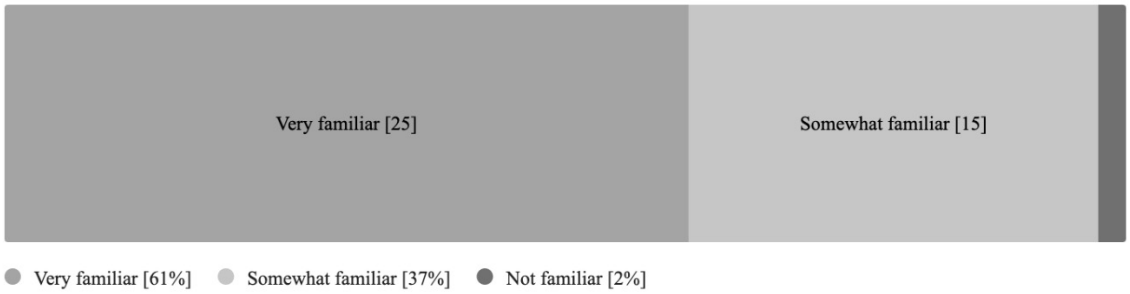

Figure 5. Distribution of 13M familiarity with ACE

Both high and low familiarity levels necessitate a closer examination to understand the underlying factors. For instance, a critical aspect to consider is whether familiarity with ACE correlates with the timing of IST completion. The following results are analyzed using a mean or average and presented via color-coded IST completion dates categorized by familiarity levels (Figure 6). The analysis reveals intriguing patterns: respondents who completed IST before February 2012 displayed the lowest average familiarity with ACE, while those who completed IST between March 2012 and November 2019 showed moderate familiarity. Respondents who completed IST between December 2019 and July 2021 indicated a higher familiarity than the previous groups. Participants who completed IST most recently, after August 2021, demonstrated the highest familiarity with ACE.

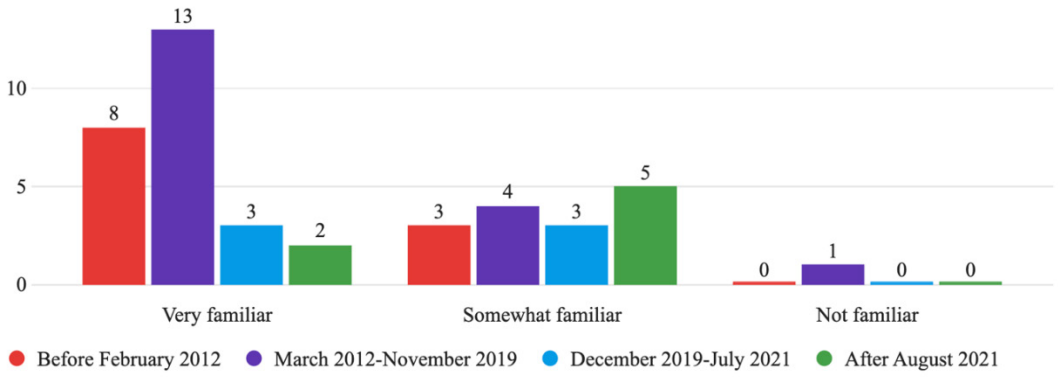

Figure 6. Correlation between IST completion dates and ACE familiarity.
Note: Figure 6 presents color-coded IST completion dates categorized by familiarity levels.

This analysis suggests that there is a positive correlation between the timing of IST completion, familiarity with ACE, and a reasonable understanding of ACE among the surveyed group. As time progresses and individuals complete IST more recently, their familiarity with ACE tends to increase. This trend implies that ACE concepts have gained greater prominence or integration within training programs over time. However, it is important to note that correlation does not imply causation and additional factors could contribute to these observed patterns. Of particular interest, eight respondents who completed IST before February 2012 reported being 'very familiar' with ACE, suggesting that familiarity with ACE may not solely be due to recent IST completion. Further research and in-depth statistical analysis, including an examination of the CFETP and IST curriculum, would be necessary to establish a definitive correlation.

2. Assessing ACE's Purpose and Objectives

Understanding ACE's purpose and objectives is fundamental for 13M officers as they play a critical role in executing ACE operations. To further identify knowledge gaps, the next logical step was to dig deeper into the participant's understanding of ACE's purpose and objectives to explore factors influencing familiarity with ACE. In response to the survey question regarding this topic, the majority of respondents exhibited a moderate to very high level of understanding, with varying degrees of understanding (Figure 7). The responses were distributed across various levels of understanding: A single respondent (2.44%) indicated 'not well at all,' four respondents (9.76%) felt they had a 'slightly well' understanding, 14 participants (34.15%) expressed a 'moderate understanding,' 13 other respondents (31.71%) reported 'very well,' and nine participants (21.95%) claimed to understand ACE's purpose and objectives 'extremely well.' This data indicates that while there is some variability in understanding, a significant portion of the 13M community strongly understands ACE's purpose and objectives.

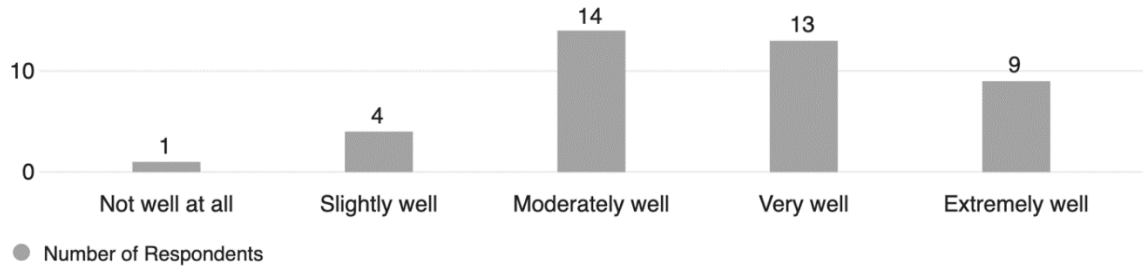

Figure 7. Distribution of familiarity with ACE's purpose and objectives

However, it is noteworthy that a small percentage of respondents reported lower levels of understanding, indicating the existence of knowledge gaps within the 13M community that warrant further exploration. A more detailed analysis follows to assess whether respondents' training phases within the 13M CFETP correlate with their understanding of ACE's purpose and objectives.

3. Impact and Implications of 13M CFETP Training Phase on ACE Understanding

Understanding the relationship between an individual's career stage, as defined by their training phase within the CFETP, and their comprehension of ACE's purpose and objectives can impact 13M officers in executing ACE operations. This analysis goes beyond statistical correlations to examine the 'so-what' of these implications. Analyzing whether respondents' training phases within the 13M CFETP correlate with their understanding of ACE's purpose and objectives will help identify if there are significant differences in understanding based on the stage of the airfield operations officer's career.

One of the key takeaways from the data is the potential divergence in perspectives between officers in different training phases, highlighting the need for tailored ACE education and the potential for a combination of strategic and tactical expertise in ACE operations among officers at different career stages. As noted in Chapter I, most respondents fall into the development training (13M3/4) phase, comprising approximately 54% of the sample. This group represents officers who are likely in the later stages of their careers, having accumulated substantial experience and expertise. Conversely, proficiency training (13M3) phase respondents account for 31% of the

sample, potentially reflecting officers focused more on tactical aspects of their roles, honing their skills and qualifications, also demonstrating a good understanding. The implications here are twofold: first, it highlights the importance of tailoring ACE education to meet the specific needs and perspectives of officers at different career stages, and second, it may suggest that ACE operations require a combination of both strategic and tactical expertise, with officers in different phases contributing unique insights. Notably, no respondents selected the initial skills training phase or follow-on skills training phases, suggesting that the survey's respondents primarily consist of officers who have progressed beyond the foundational training stages.

The observed correlation between training phases and ACE understanding raises questions about aligning the 13M CFETP curriculum with the evolving demands of ACE operations. Officers in later training phases tend to exhibit higher ACE understanding, implying that the curriculum in these phases may provide more preparation for ACE-related responsibilities. This suggests a need to review and adjust the content and focus of earlier training phases to ensure that all 13M officers receive adequate exposure to ACE concepts and principles, regardless of their career stage.

While the data shows a positive correlation between the training phase and ACE understanding, it is crucial to address the minority of officers in earlier training phases who also exhibit good ACE comprehension (Figure 8). This implies that some officers may acquire ACE knowledge through means other than their formal training, such as on-the-job experience and practical application. Recognizing and harnessing these informal avenues of learning can enhance overall readiness and ensure dissemination throughout all career stages.

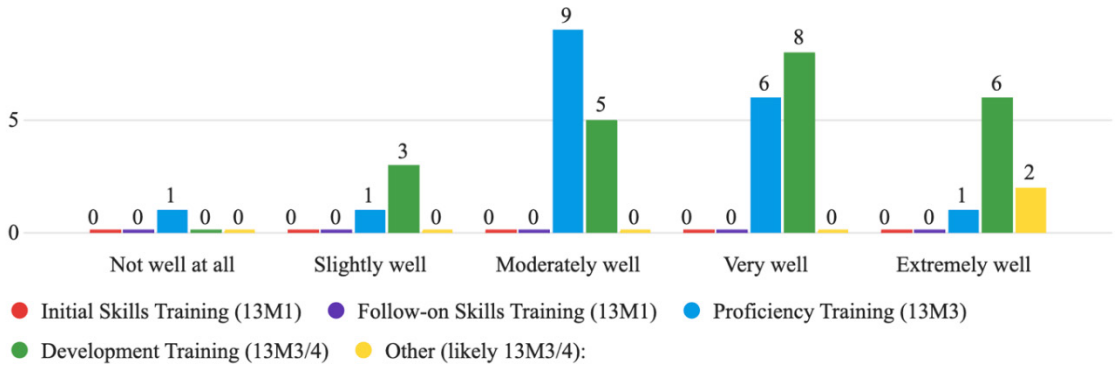

Figure 8. Correlation between CFETP training phase and understanding of ACE's purpose and objectives. Note: Figure 8 presents color-coded CFETP training phases categorized by levels of understanding.

However, it is important to note that this correlation does not necessarily imply causation and may be influenced by several factors, such as the content and focus of training materials within each phase, the timing of the curriculum updates, and the practical experiences gained during different training phases. The following section investigates specific knowledge gaps and variations in understanding within these training phases to comprehensively understand the factors influencing the survey results and their implications for 13M readiness for ACE operations.

4. Curriculum Updates Improve Understanding

The relationship between the training phase and understanding of ACE's purpose and objectives suggests that 13M officers who completed training more recently tend to have a better understanding (Figure 9), highlighting the potential benefits of continuous training updates and alignment with evolving operational needs. Maintaining an up-to-date and relevant training curriculum becomes paramount as the Air Force adapts to changing strategic priorities and challenges. Therefore, investing in ongoing professional development and education is critical to keeping to the 13M community prepared.

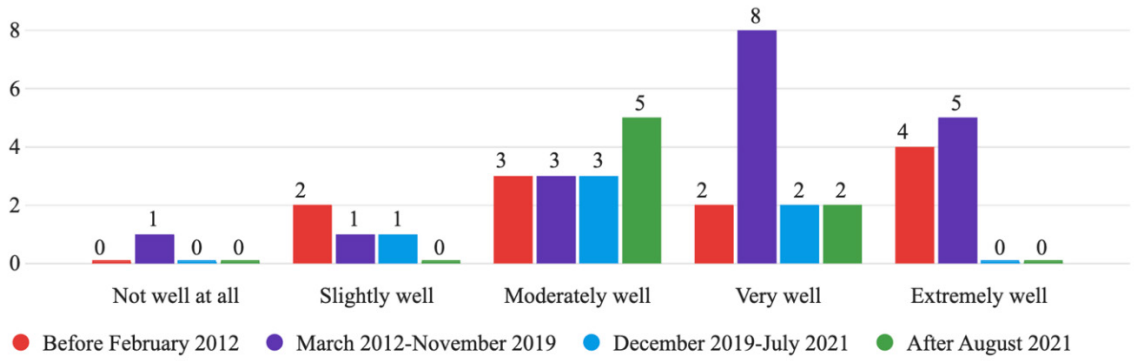

Figure 9. Correlation between IST completion dates and understanding of ACE's purpose and objectives. Note: Figure 9 presents color-coded IST completion dates categorized by levels of understanding.

Lastly, the variations in ACE understanding across training phases emphasize the importance of cross-collaboration and mentoring initiatives within the AO community. The diversity of officers at different career stages brings unique perspectives and experiences that can be leveraged to enrich discussion and foster a culture of mentorship and knowledge sharing among airfield operations officers. Harnessing this wealth of expertise within the community may bridge knowledge gaps effectively. Senior officers with extensive ACE experience can mentor junior 13M officers, providing guidance and facilitating the transfer of ACE knowledge. This mentorship approach leads to more comprehensive and thorough planning, enriches discussions, and enhances the planning and execution of ACE operations, resulting in more comprehensive and effective outcomes. By actively encouraging mentorship and collaboration, the AO community will be better equipped and prepared for the evolving demands of ACE operations.

The correlation between 13M CFETP training phases, IST completion dates, and understanding of ACE's purpose and objectives offers valuable insights that extend beyond statistical trends. It calls for a holistic approach to ACE education, incorporating formal training, informal learning, and continuous updates to the curriculum. It also underscores the need for a dynamic and adaptable 13M that can effectively collaborate and share knowledge across career stages throughout the community, ultimately enhancing the readiness and effectiveness of ACE operations within the Air Force.

E. STRENGTHENING 13M COMBAT READINESS

ACE relies on several key enablers to create multiple adversary dilemmas, deterring aggression and ensuring conflict success, but it can be difficult to execute even if understood fully. These enablers, multi-capable airmen (MCA), mission command, and tailorable force packages are critical for ACE's success. Examining the level of familiarity and understanding that airfield operations officers possess regarding these enablers is necessary to assess their readiness and capability in executing ACE operations. For this question, participants were allowed to select more than one option to indicate their familiarity with these enablers, thus reflecting a more nuanced understanding among respondents. In assessing the survey results, it is evident that 13M officers are highly familiar with key enablers (Figure 10).

As expected, nearly every participant surveyed, or 39 officers (98%), reported being well-versed in MCA; however, there is room for improvement in understanding mission command, with 23 respondents (58%) reporting familiarity with it. Another 24 participants, or 60%, are acquainted with tailorable force packages, indicating potential for enhanced comprehension opportunities. For the 3% who reported unfamiliarity with any of ACE's enablers, additional training and education may be beneficial to ensure a comprehensive grasp of these essential concepts.

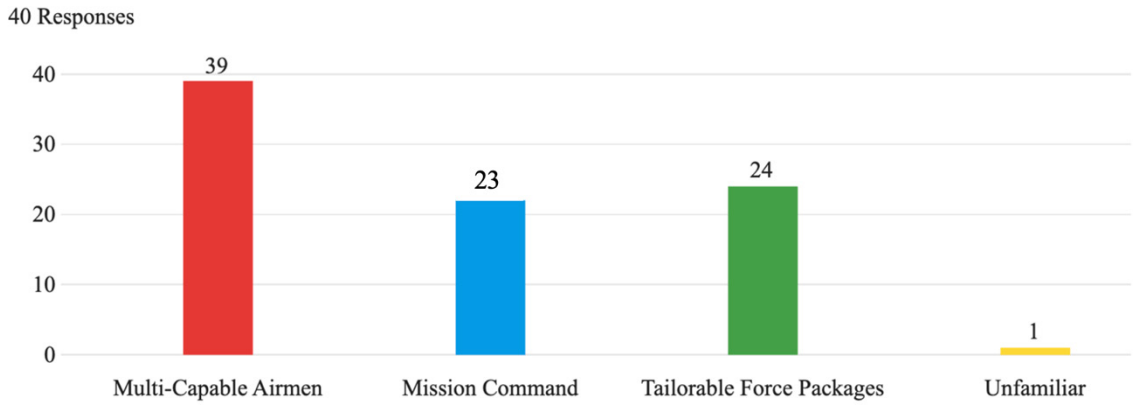

Figure 10. Distribution of familiarity across ACE enablers. Note: Figure 10 presents color-coded ACE enablers categorized by levels of understanding.

Further analysis of the survey data reveals that MCA is the most recognized ACE enabler, with 26 respondents indicating they are very familiar; however, there is a notable decline in the number of officers who report only some familiarity, and none reported a lack of familiarity altogether. In contrast, mission command knowledge is less pervasive; while 19 officers are very familiar, there is a significant drop to 14 who are somewhat familiar and one who is not familiar. Tailorable force packages appear to be the least familiar among the concepts; no respondents claimed to be very familiar, six reported some familiarity, and one was not familiar at all. These trends suggest that while MCA and mission command are relatively well-understood, tailorable force packages represent a knowledge gap among the officers surveyed (Figure 11).

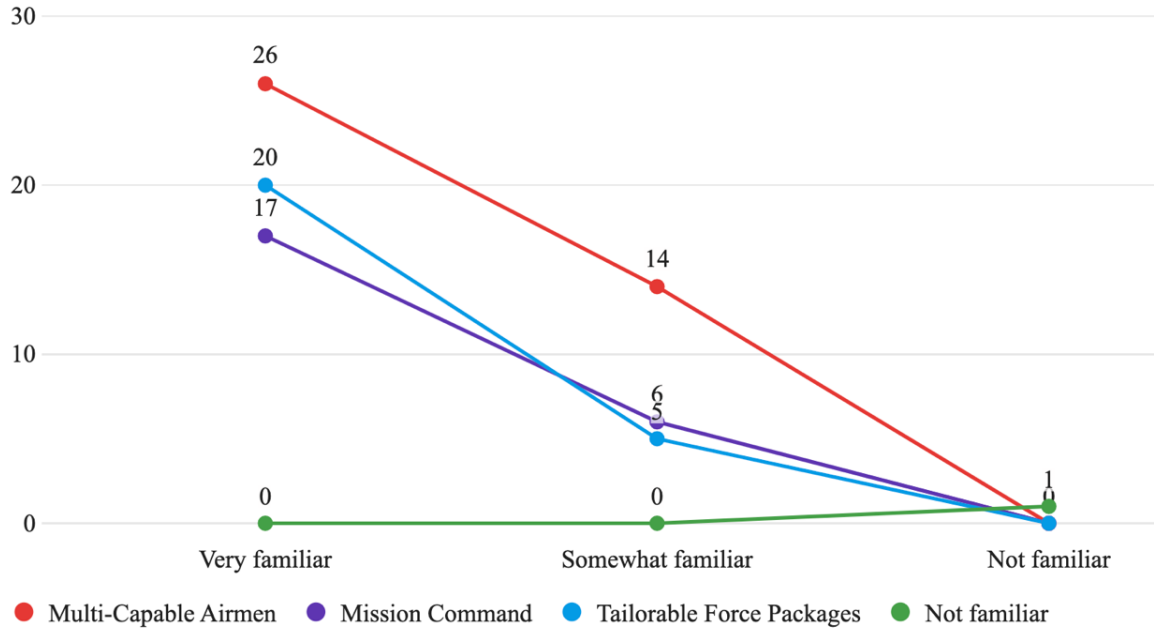

Figure 11. Correlation of ACE enablers and familiarity levels. Note: Figure 11 presents color-coded ACE enablers categorized by familiarity level.

1. Multi-capable Airmen (MCA)

MCA requires initiative and equips and empowers airmen with the skills necessary to solve problems outside their specialties, and 13Ms' strong familiarity with this concept demonstrates they are likely to understand how to adapt in times of scarce

resources or unforeseen challenges. Environments where resources are limited, and traditional role boundaries may be blurred. The MCA concept is a transformative asset, pivotal in evolving operational dynamics to enhance airpower agility, and essential for adapting to resource scarcity and unforeseen challenges. Familiarity with MCA is crucial, as it transcends traditional roles, fostering initiative and cross-specialty problem-solving. MCA empowers airmen to address the multifaceted challenges of modern airpower. For 13M officers, MCA is not just an enabler but a transformational approach that ensures operations effectiveness by utilizing the full spectrum of skills within a small team. It is about capitalizing on airmen's inherent drive to innovate and solve problems, enabling them to forge solutions in dynamic and unpredictable circumstances. While 39 of the respondents indicated a strong familiarity with MCA, suggesting a recognition of its value in enhancing mission adaptability, this also highlights a slight gap in understanding that needs bridging.

The readiness of airfield operations officers to leverage their cross-functional capabilities underpins the success of ACE operations, ensuring they can respond proactively to operational demands; therefore, extending this familiarity with MCA to 100% of 13M officers is essential. As the most recognized among the ACE enablers, MCA is a demonstration of the Air Force's evolving doctrine, one that values multifaceted proficiency and foresight in mission planning and execution. The upcoming analysis breaks out two CFETP training phases, proficiency, and development training, where the gap is most evident (Figure 12). Addressing this through targeted educational and training initiatives that simulate resource-constrained environments, and a cultural embrace of cross-functional expertise will further empower 13Ms, who are the Air Force's key asset in navigating the complexities of future airpower with agility and foresight.

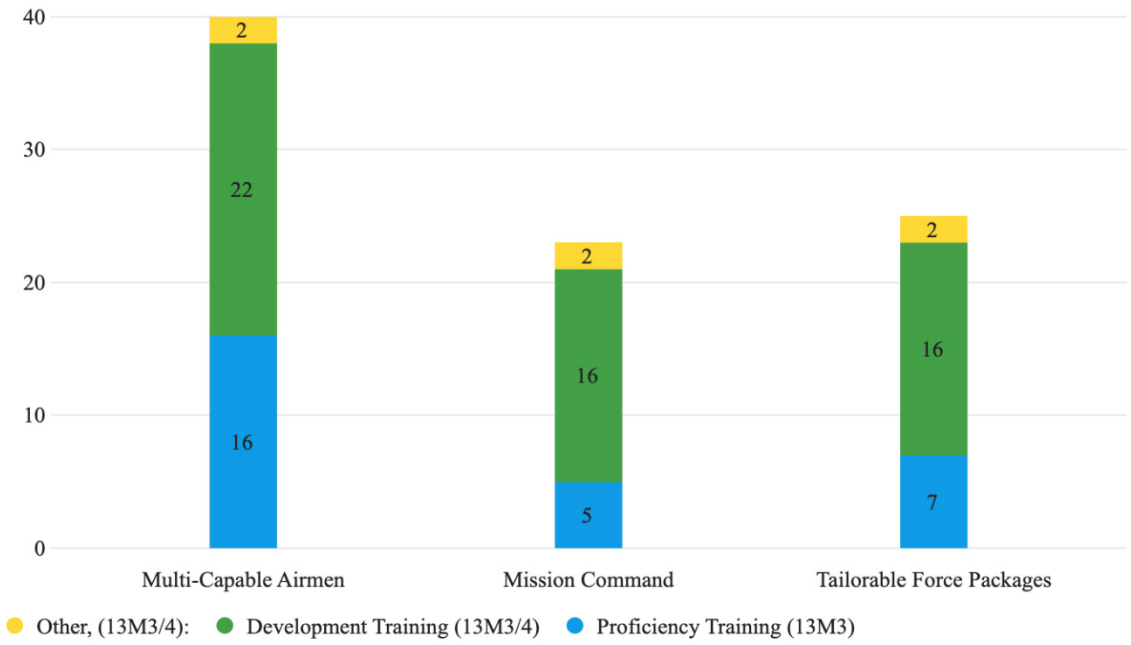

Figure 12. Correlation between CFETP training phase and ACE enablers. Note: Figure 11 presents color-coded CFETP training phases categorized by ACE enabler.

As previously mentioned, this data indicates that a staggering 98% of respondents are familiar with MCA, which is especially pronounced among those in the development training phase, where 54% of the surveyed respondents reside. These are airfield operations officers who have progressed beyond the foundational skills and are likely engaging with complex operational concepts, such as MCA, at a deeper level. In contrast, officers in the proficiency training phase, encompassing 41% of survey respondents, denotes a focus on honing specialized skills within one's core specialty. However, the high percentage of MCA familiarity in this training phase suggests that at this stage of their career, 13Ms are being exposed to the multidisciplinary aspects of their and their team members' roles, preparing them for broader operational impact. Within the 13M community, the focus should be on leveraging these high levels of familiarity and integrating MCA training across all phases of the CFETP. One way to accomplish broader education across training phases is to incorporate MCA as a training module during IST. This ensures that airfield operations are aware of the concept and equipped with the skills to implement it effectively, regardless of their CFETP training phase.

2. Mastering Mission Command Is a Must

For 13M officers, mastery of mission command is essential to directing airfield operations within the ACE framework, and it is not just a component of ACE–it is its very essence. Airfield operations officers, who play a pivotal role in steering critical airfield operations, mastery of mission command is non-negotiable. Their ability to communicate clear intent, trust their teams to perform, and empower them to adapt to the unforeseeable is what will ultimately define the success of ACE. Mission command is not merely a facet of leadership; it is the operational bedrock of ACE, crucial for enabling decentralized action and expedited decision-making in complex environments. It instills confidence in airmen, allowing them to act with autonomy and initiative, which is vital for maintaining the agility and resilience that ACE demands and, therefore, is not merely a leadership style for airfield operations officers; it is a strategic necessity that underpins every aspect of ACE operations. The survey results underscore the need to enhance training at all levels, ensuring that 13M officers are equipped to apply mission command principles effectively from the initial stages of their career.

Further analysis of Figure 12 reveals a correlation of varying levels of mission command across different stages of the CFETP training phases for 13M officers. While the MCA concept boasts a near-universal recognition, the data indicates that mission command shows a disparity in familiarity that correlates with the CFETP training phase with varied levels of understanding. Within development training, 16 out of 22 13Ms are familiar with mission command, suggesting that the concept is emphasized and likely practiced at more senior levels where flight command responsibilities necessitate a greater degree of autonomous leadership. Conversely, only five of the 17 officers in proficiency training report familiarity, indicating that while foundational concepts of mission command may be introduced, their practical application and integration into daily operations are not fully realized in the earlier stages of career development.

This survey data pinpoints a critical area for enhancement in the CFETP: the integration of mission command principles from the outset of AO training, providing an opportunity to expand the dissemination of mission command within the early stages of a 13M officer's career. Expanding the reach of mission command within IST and FST

could ensure a more uniform understanding across all career stages. By aligning training modules with ACE objectives, officers can develop a solid understanding of mission command from the onset of their careers, including integration into simulated exercises and real-world scenarios that require autonomous decision-making to bridge the familiarity gap, fostering a robust culture of mission command that aligns with the operational realities of ACE. These results provide a roadmap for CFETP enhancement, signifying the need for a deliberate focus on mission command education throughout the 13M community and training curriculum. Cultivating a culture steeped in the principles of mission command is comprehensive in nature; it is important to marry theoretical knowledge with practical application to close the familiarity gap. As a result, 13M officers will be well-prepared to navigate the ACE environment and the broader landscape of modern airpower operations.

3. Deciphering Doctrine and Customizing Success through Tailorable Force Packages

In the ACE paradigm, tailorable force packages represent the Air Force's strategic shift towards agility and precision, allowing for a rapid and flexible assembly of airpower assets customized to meet unique or specific mission demands. Taking this modular approach means 13M officers must quickly adapt to the fluidity of modern operational theaters, ensuring that the forces under their command are competent and mission ready. Analysis of the survey data shows a surprisingly large representation of 13M officers familiar with tailorable force packages, particularly those in development training, with 16 out of 22 indicating familiarity (Figure 12). This suggests a growing focus on strategic application and an increased emphasis on these concepts as airfield operations officers progress in their training and advance in their careers. However, the level of familiarity drops significantly among those in proficiency training, with only six indicating familiarity, highlighting an opportunity to focus on education and training of tailorable force packages earlier in an officer's career.

Tailorable force packages empower airfield operations officers to make informed decisions regarding force composition and deployment, allowing them to inventory and allocate resources effectively with mission objectives. While the ability to tailor these

packages is a matter of task segregation, it is also a strategic asset that demands a deep understanding of integration and mission-set reintegration, with a focus on building small, multifunctional teams capable of rapid and cohesive responses to various scenarios. The ability to tailor these packages requires an understanding that extends beyond traditional logistical concerns, it involves knowledge of aircraft capabilities, such as pallet positions and transport requirements, coupled with logistics expertise. A 13M must be able to answer questions similar to this: do I have enough airlift to move my team and equipment? Do the specialties of my small team cover all functional requirements to accomplish the mission? These questions can only be answered by a 13M intimately familiar with tailorable force packages coupled with a strong background or experience working out the logistics, aligning closer to the survey results that show a higher level of familiarity among the development training 13Ms.

Although approximately 60% of 13Ms are familiar with tailorable force packages, the overall familiarity needs to increase across all training phases, starting from the IST phase of 13M training. Tailorable force packages are instrumental in optimizing resources and capabilities to meet specific mission requirements, which 13M understanding can translate into facilitating effective planning and resource allocation at airfields. Gaps in understanding of this ACE enabler could be enhanced by education and training programs or through simulated exercises or deployments to build an experience that reflects real-world scenarios.

The varying levels of familiarity with ACE enablers across the AO community underscore the importance of continuous education and training for airfield operations officers. Enhancing their familiarity with all three ACE enablers, MCA, mission command, and tailorable force packages, will empower them to lead more effectively in uncertain and resource-constrained environments, ultimately contributing to the successful execution of ACE. Investment in developing 13M officers' understanding of these ACE enablers will harness their full potential as leaders in airfield operations and modern warfare's fast-paced and unpredictable environment.

F. TRAINING LANDSCAPE: A DOUBLE-EDGE SWORD

As the Air Force embraces ACE, the necessity for a corresponding evolution in 13M training is undeniable. Comprehensive ACE training is vital for officers tasked with navigating the intricacies of modern airpower employment. However, has the 13M training curriculum kept pace with these operational shifts? This analysis provides an insightful snapshot of where 13M officers are acquiring their ACE training, revealing both strengths and potential areas for curriculum development. Data reveals that on-the-job training is the primary method of ACE training acquisition for 13M officers, with 21 out of 41 respondents indicating this pathway (Figure 13). While this hands-on approach ensures practical experience, it highlights the potential inconsistencies in formal training opportunities during IST and FST, stages crucial for foundational learning. Figure 13 starkly illustrates the absence of ACE training during the foundational stages of their career, IST and FST, suggesting a potential disconnect between initial training modules and the operational demands of ACE. Furthermore, 14 officers report no ACE training, emphasizing an urgent need for curriculum development to address this gap.

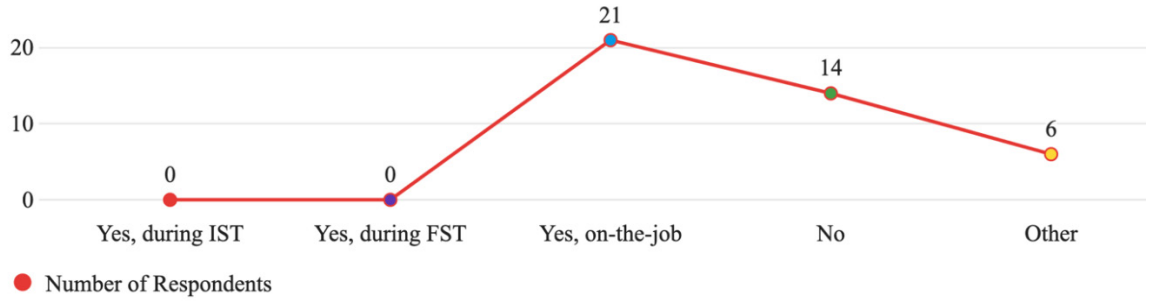

Figure 13. Distribution of where 13M officers acquired their ACE training

An open-text option was used in this question to capture all methods a 13M may have acquired ACE training and uncover unconventional yet valuable methods of acquiring ACE training. While formal training programs can enhance success, six respondents selected 'other,' revealing that 13M officers are encountering ACE concepts through diverse and sometimes unconventional pathways. These comments provide valuable context and support alternative pathways for developing ACE competencies.

The respondents' comments suggest that ACE training and exposure come in various forms:

- Cross-training with other military branches, like the United States Marine Corps, introduces ACE-like concepts and hands-on experience, despite a lack of continuity in formal training.
- Deployments serve as vital environments for learning ACE principles, even if application guidance is sometimes unclear for 13M roles.
- Roles in developing ACE requirements at the Air Force level indicate deep engagement with ACE beyond standard training paths.
- Exposure to a variety of Air Force specialties and strategic staff positions contributes significantly to ACE competency.

These insights from the field suggest that ACE competencies are being developed through a range of diverse experiences, even without formal training. Harnessing this informally acquired knowledge illustrates that ACE training is not confined to the classroom; it extends to the field, across services, and through high-level operational planning. Recognizing and formalizing diverse training experiences within the ACE framework can lead to a richer, more versatile training curriculum. The 13M community should validate and recognize informal learning experiences as credible ACE training. Facilitating forums for knowledge exchange could allow those with non-traditional ACE experiences to share their insights.

These findings support the importance of integrating ACE training into the earliest phases of an officer's career development, whether by formal or informal means. Formalizing and embedding ACE training into the IST and FST phases and enhancing on-the-job learning with structured educational opportunities would ensure a consistent foundation of knowledge and skills across the airfield operations community, preparing them to lead effectively in ACE operations. Additionally, addressing the 34% without ACE training is vital, as it represents a significant portion of officers who might be unprepared for ACE operations. The Air Force's shift to ACE operations necessitates a

corresponding shift in training methodologies, including formalized structured approaches to create a uniformly high level of readiness. For those beyond IST, FST, or already in the field, enhancing on-the-job training with alternative opportunities can fill existing knowledge gaps, forging a corps of 13M officers who are familiar with ACE and adept at applying them in any operational context.

The disparity in the application of ACE education and training among 13M officers is a crucial issue impacting operational readiness; the value of ACE education and training is realized in its application and only effective as their proficiency is gained through frequent and practical use in exercise or real-world scenarios. This section examines the correlation between ACE education and training and the frequency of ACE application, from daily to never, highlighting varying levels of proficiency across the 13M force (Figure 14). Regular participation in ACE exercises and training is essential to maintain operational proficiency and readiness, yet the infrequency of application for a significant number of airfield operations officers shows a lack of proficiency. Survey data on the frequency of ACE exercises or training events show a stark contrast in how often 13M officers apply their ACE knowledge and skills.

Figure 14. Distribution of frequency of participation in ACE exercises or training events

The landscape of participation frequency is varied, which can have significant implications for combat air power projection and for the effectiveness of ACE implementation across the Air Force (Figure 14). Daily engagement, reported by a small

subset of 3 officers, suggests a high operational tempo or proactive approach where ACE skills are routinely applied and refined, likely leading to higher proficiency and readiness levels. Very few officers reported weekly (1 participant) engagement, which may reflect specialized units, such as the Pacific's 36th Contingency Response Group, where ACE is a regular but not daily focus.[41] The most common frequency among participants is monthly (11 participants), a level of engagement that can provide a consistent touchpoint for ACE principles that may be structured but not sufficient enough for officers to reach a maximum level of proficiency without additional study or practice.

The most concerning are those who rarely (12 respondents) or never (14 respondents) participate in ACE exercises, representing a substantial portion of airfield operations officers where the application of ACE training is infrequent or non-existent and clearly lack regular exposure to ACE. A notable portion of survey respondents participating sporadically in ACE training could imply a decline in proficiency over time, resulting in a degradation of operational readiness. Airfield operations officers who do not routinely exercise ACE concepts may discover that their abilities are diminished when required to execute ACE operations, as the adage 'use it or lose it' is widely recognized in the field of skill retention. This infrequent participation is alarming as it suggests a significant shortfall in AO capabilities to support or execute ACE operations.

A closer look at the correlation between the method by which 13M officers received their ACE training and the frequency of their participation in ACE exercises or training events reflects different levels of operational readiness (Figure 15). However, it is clear that those who acquired their ACE skills on the job tend to engage more frequently in ACE-related activities, potentially due to the direct relevance and immediate applicability of the skills developed in their daily duties and are likely to have higher proficiency and confidence in applying ACE principles. Individuals who received on-the-job training show a spread from weekly to rarely participating in ACE exercises, with the majority falling into the monthly category, suggesting that while on-the-job training is beneficial, it may not always be accompanied by structured opportunities to

[41] Department of the Air Force, "36th Contingency Response Group," Anderson Air Force Base, updated November 2, 2023, https://www.andersen.af.mil/36crg/.

practice these skills in a formal setting. 13M officers who trained through other means appear less frequently in the weekly and monthly categories, with a slight increase in the 'rarely' and 'never' participation groups, indicating a need for more regular and structured application opportunities for those who may not encounter ACE concepts in their daily roles. An equal distribution among those who never participated in ACE exercises or training events implies that regardless of how ACE training is received, a population of the 13M community still does not apply their training.

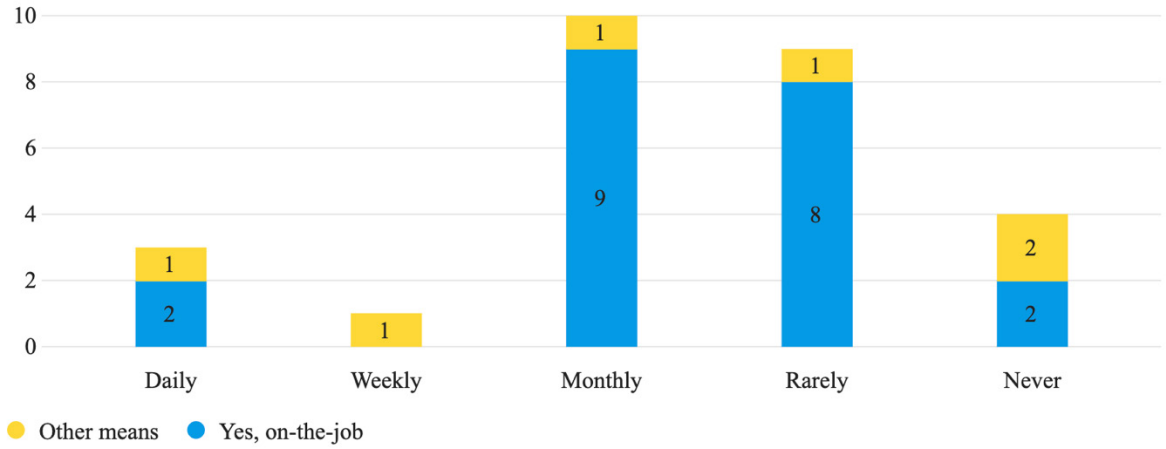

Figure 15. Correlation between ACE training and frequency of application. Note: Figure 15 presents the color-coded frequency of ACE training applications categorized by how ACE training was acquired.

Several measures could be taken to mitigate the risks associated with the infrequent application of ACE education and training. First, 13M officers should be encouraged to conduct regularly scheduled drills that focus on ACE concepts, even outside formal exercise events, to ensure their skills and knowledge remain sharp. Those who followed a structured but less frequent application of ACE could benefit from an increase in the number of exercises or training opportunities available. Additionally, introducing short, scenario-based training modules and simulations rather than large-scale exercises within the 13M community's daily routine can help reinforce ACE skills without the need for extensive resources, specifically for those who rarely or never have the opportunity to participate in ACE training. This could be particularly beneficial to

those with less resource allocation and the opportunity to participate in ACE-related training. Cross-training sessions with those who have higher engagement in ACE exercises should also empower them to share best practices and maintain skill levels across the force. While this could be seen as yet 'another task' added to the 13M's duties and responsibilities, participation by linking exercise performance to evaluation reports and readiness assessments could prove incentivizing. Finally, it is essential to implement a central shared knowledge database to store lessons learned and best practices after each training event to assess the application of ACE skills, identify areas for improvement, and adapt training methods accordingly. Collectively, these measures contribute to a more cohesive and effective ACE training strategy.

The frequency with which airfield operations officers participate in ACE exercises and training events to apply their skills and knowledge is critical to the overall effectiveness of the ACE concept within the Air Force. Airfield operations officers should actively seek to maximize the application of their ACE education, bridging the gap between theory and practice identified in this survey. It is not enough for officers to be trained in ACE concepts alone; they must also become proficient in its execution. While the AO community should prioritize regular, hands-on training to build and maintain the essential skills required for ACE operations, gaps in training frequency still require attention. By addressing both of these aspects, airfield operations officers will become better educated, trained, and prepared to proficiently execute ACE operations, enabling them to meet the demands of dynamic operational environments confidently.

G. SPECTRUM OF SELF-ASSESSED CONFIDENCE IN ACE READINESS

To gain a comprehensive understanding of the 13M officers' relationship with ACE, an assessment of their self-perceived readiness for their role within ACE revealed a spectrum of nuanced responses, reflecting the officers' varying degrees of confidence. Some officers exude unwavering confidence in their abilities, others navigate a path of uncertainty, and a few continue to struggle with doubt about their capabilities (Figure 16). Notably, 24% of officers, or 10 respondents, reported a definite readiness, while 39%, or 16 respondents, expressed probable confidence, acknowledging certain

knowledge gaps. Additionally, 17% or seven officers admit feeling uncertain about possessing the requisite knowledge and skills, and 19% or seven respondents openly doubt their proficiency. Unsurprisingly, only one officer, representing 2% of the 13Ms surveyed, explicitly acknowledged a lack of essential knowledge and skills. These findings emphasize the importance of targeted training and support to ensure optimal ACE execution.

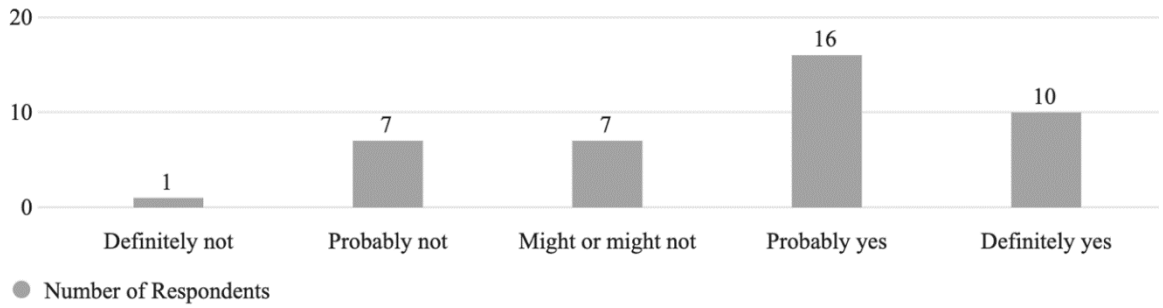

Figure 16. Distribution of self-evaluation of necessary knowledge and skills to perform ACE effectively.

Respondents who selected 'might or might not' in their self-assessments provided candid insights offering a valuable glimpse into the nuanced challenges faced by airfield operations officers as they navigate their roles within ACE, which allows us to gain a deeper understanding of their perspectives and the factors that influence their confidence levels. Their commentary ranges from role expectations and clarity to a desire for additional training, while others raised concerns regarding resource availability and general experience variability.

1. Role Expectations and Clarity

Role clarity is a fundamental factor influencing the confidence levels of 13M officers in their ACE roles, leaving room for assumptions and guesswork. Respondents who expressed uncertainty often attribute it to a lack of clear understanding of what is expected of them in executing ACE operations. Some respondents even expressed a desire for greater clarity regarding the expectations of their roles within ACE, suggesting

that vague role definitions and additional training requirements could influence their self-assessment outcomes. For example, one respondent noted,

> "Since I have not been trained in any other AFSC, I'm not totally sure I could do this... but if I am asked to manage AFSCs outside of the AOF... yes, I could do that."[42]

This statement highlights that without clearer role definitions and additional training requirements, 13M officers remain unsure whether they possess the necessary knowledge and skills, affecting their level of confidence. Another respondent admitted,

> "I know what our Airmen's ACE looks like, but not the AOF's position in ACE."

This lack of clarity can be traced back to the absence of standardized role definitions, which may vary across different commands, wings, or major commands. The consequence of this variability is that officers may have to adapt to differing role expectations when deployed to different assignments. As seen in the previous quote, the implications of inconsistent role expectations can lead to confusion and self-doubt among officers. Addressing this challenge to clearly define and standardize roles should be communicated effectively to all airfield operations officers across various commands, boosting their confidence and improving future self-assessment outcomes.

2. A Desire for Additional Training

The desire for more targeted training is a reoccurring theme from the open text responses and reflects their acknowledgment that their tactical skills and training improve their conceptual understanding of ACE, recognizing that ACE is a complex and dynamic operational framework. While officers may possess a conceptual understanding of ACE principles, they admit to lacking the tactical skills and training necessary to excel in their roles. As one respondent mentioned,

> "From a conceptual standpoint, I feel I'd know what needs to get done, but in terms of tactical skills/training, I'd say I haven't had enough."

[42] The Airfield Operations Flight (AOF) performs and leads airfield operations functions of air traffic control, airfield management, radar, airfield and weather systems, and airspace management within the National Airspace System, International Civil Aviation Organization, and combat environments.

Sentiments like this drive the point made previously in this chapter of the importance of tailored training programs to address specific knowledge and skills gaps. It also suggests that the current training programs may not adequately prepare officers for the practical demands of ACE operations. Targeted training initiatives are crucial to bridging the gap between conceptual knowledge and practical application within ACE, focusing on the development of specific skills and competencies required for officers to perform effectively. Regular training updates and refreshers can help maintain proficiency and boost officers' confidence in their ACE roles.

3. Resource Allocation and Management

Respondents' concerns about resource availability indicate potential challenges in executing ACE operations, particularly related to insufficient access to equipment, tools, or supporting Airmen necessary to fulfill their roles effectively. ACE's adaptability and versatility may require a flexible approach to resource allocation, considering the diverse needs of 13M officers across various ACE environments. Respondents raised concerns about the availability of resources required to perform effectively within the ACE framework. Their comments hint at the need for better resource allocation and management to support their roles. For instance, one respondent stated,

> "ACE rules and regulations don't exist or, at a minimum, have not been tailored for broader operations."

While ACE doctrine has been published, this statement highlights the challenges airfield operations officers face when attempting to execute ACE operations without the necessary resources. Although additional clarification is required to fully understand the concerns surrounding resources and management, these demands from the field demonstrate that effective resource allocation and management can contribute to officers' confidence and readiness in ACE operations.

4. Experience Variability

Experience variability arises from inconsistencies in ACE operations and training across different commands, which can lead to differing levels of readiness and confidence among airfield operations officers. Experience variability emerged as a

significant factor influencing self-assessment outcomes, noting that differences in exposure to ACE operations across various respondents' comments led to a disparity in self-assessed readiness. One respondent aptly pointed out,

> "Due to inconsistencies of wing, numbered Air Force, and major command concept of operations for ACE exercises and training events… our 13M force will be used perfectly to maximum effect in some commands and completely misused in other commands."

This experience gap demonstrates the need for standardization and comprehensive training across all commands for both the 13M officers and the commanders responsible for tasking them. Some commands may have a better understanding of how to utilize 13M officers effectively within ACE, while others may struggle due to a lack of awareness about the 13M skillset and how it fits into ACE operations. Sharing best practices and successful approaches across commands can help improve the utilization of 13M officers in ACE, though experience should not be the sole determinant of confidence; every 13M officer should have access to consistent and comprehensive ACE training regardless of their posting.

The analysis of the participant's candid comments highlights the multifaceted challenges faced by 13M officers, addressing role clarity, providing targeted training, ensuring effective resource allocation and management, and reducing experience variability, key steps toward enhancing 13M confidence and readiness within ACE. These insights serve as critical guidelines for improving and empowering airfield operations officers' capabilities to excel in their roles.

H. 13M SELF-ASSESSED TRAINING NEEDS AND PREFERENCES

In an era where ACE operations are rapidly advancing, the preparedness of 13M officers is critical, where self-assessed training needs and preferences could reveal shortfalls in education and training gaps to suggest improvements. The self-assessment of 13M officers conveys confidence in their readiness for ACE operations, however, the uncertainties and doubts voiced by respondents point to a need for dedicated training programs tailored to enhance proficiency and confidence in ACE-related tasks. This section explores and integrates training needs and preferences directly formulated from

the self-assessment of 13M officers, focusing on those who expressed an uncertain view of their capabilities to provide a broader perspective toward closing the proficiency and confidence gap (Figure 17). Unsurprisingly, 26 participants (39%) called for more technical training and a deeper dive into the intricacies of ACE's technical aspects, such as specific equipment operations, suggesting a drive to master the tools and equipment that are the lifeblood of airfield operations. A successful military mission relies heavily on effective communication, a fact that 12 respondents (18%) recognized by requesting more training in this area, emphasizing the role it plays in their teams' cohesion and operational success. 11 participants (16%) acknowledged leadership, a pillar of military command, as a trait to further cultivate, demonstrating an understanding that leadership extends beyond rank; it is a well-balanced blend of strategy, morale, and decision-making ability. Safety remains the least concern, with eight officers (12%) emphasizing the importance of safety training, indicating an awareness of the risks inherent in ACE operations and a proactive stance towards mitigating them. A wider view is provided by the ten respondents who selected 'other' to indicate their specific range of unmet or untapped opportunities to become more familiar with ACE. These include specific procedural training to soft skills enhancement, indicative of a community eager to adapt and thrive.

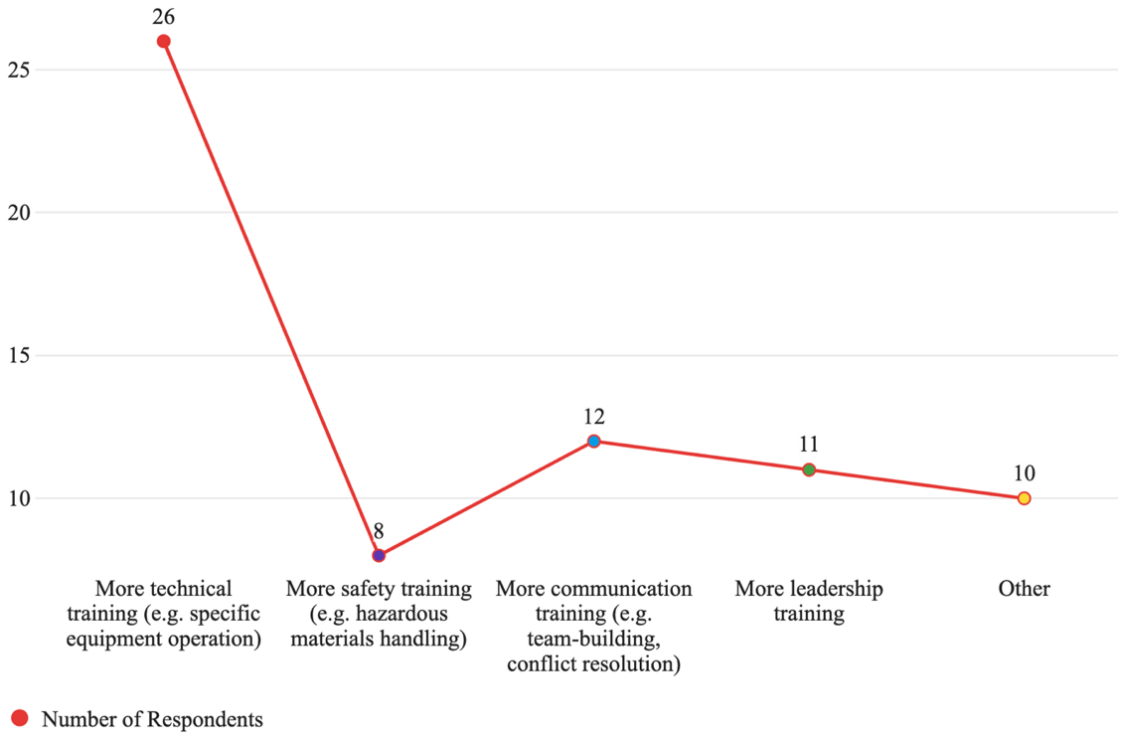

Figure 17. Distribution of 13M future training and education preferences

1. We Want Technical Training

Respondents' predominant requirement is technical training to bolster operational capabilities in managing and operating specialized ACE equipment. This need reflects the evolution of equipment and systems, necessitating ongoing education to keep pace with technological advancements. Enhanced technical proficiency promises reduced downtime, heightened operational efficiency, and few accidents stemming from equipment misuse. According to this officer, various skills are learned while others may be negated:

> "ACE requires creative, critical thinking that an AOF assignment doesn't develop."

As equipment and systems or technology used in ACE operations evolve, there is a continual need for up-to-date training to handle such advancements. Proficiency in technical skills can directly impact the efficiency of operations, reducing downtime and improving response times during critical missions. With better technical training, the risk

of accidents due to operational errors or misuse of equipment due to lack of training can be significantly reduced. Additionally, by acquiring new skills, airfield operations officers may see technical training as a pathway to advancing their career within ACE as they move from flight to squadron levels and above.

Examples of technical training could include workshops and seminars, on-the-job training, certification programs, and simulation-based training. First, engaging experts from the industry to conduct intensive hands-on sessions with emerging technologies or technologies used in ACE through roadshows or the creation of certification courses. On-the-job training has shown beneficial for 19 officers, as discussed earlier in the chapter, and could be more structured to include technical training or allow for actual hands-on application. Other certification courses could be utilized to document specific skill sets and assist in standardizing proficiency levels across the AO community. One respondent suggested,

> "An expansion of the Landing Zone Safety Officer program would seem to be a natural next step in executing the ACE and MCA concepts."

The Landing Zone Safety Officer course is available to 13Ms; however, course funding and availability may be limiting factors as space is limited and typically requires unit funding to attend. While logistics is its own specialty in the Air Force, another participant commented,

> "Logistical training to understand what is required to employ AO teams and equipment (modes of transportation, loading/unloading procedures, pack out procedures, etc.) and what is required to sustain them (fuel, food, water, etc.)."

Logistics and supply chain management systems are often complex and require in-depth training and repeat use to build experience, which could benefit airfield operations officers planning or executing ACE operations. In essence, the demand for more technical training reflects a proactive mindset to meet the challenges of ACE. It is an investment in human capital that can have far-reaching benefits, including improved performance, enhanced safety, and a more motivated and skilled community of airfield operators.

2. Communication Is Key

Communication skills, particularly in cross-functional settings, are critical for ACE operations, ensuring mission-critical information flows seamlessly across different teams–engineering, logistics, maintenance–and fostering a collaborative environment essential for ACE success. Training programs should, therefore, incorporate modules on crisis communication, cultural competence, and cross-functional coordination to empower 13M officers to lead in complex, high-pressure situations. Nearly a third of those who preferred technical training also prioritized the preference for more communication training, emphasizing the need for effective communication. Particularly cross-communication with critical functions that support ACE operations, highlighted by this respondent,

> "Networking is a crucial component of being a 13M,"

and this comment,

> "More training to get 13Ms in contact with civil engineers, logistics, maintenance, etc."

As a 13M, networking is an essential element in the collaborative and often high-pressure ACE environment for integrating various airfield operations stakeholders and relies on relationship-building beyond planning sessions and meetings,

> "This is especially important in the joint and coalition environments… this topic must be taught and emphasized at every phase of training."

These quotes highly value the importance of continuous, proactive relationship-building across functions, but it is a multifaceted skill set encompassing various aspects of the workplace. In addition to developing interpersonal skills, 13Ms must be able to clearly communicate, verbally and in writing, mission intent in high-stakes environments where miscommunication can lead to critical errors. Communication training with regard to ACE extends into specialized areas of communication, such as crisis communication and cultural competence, often offered before deployment. Such training could prepare officers to communicate clearly to their teams, calmly with host nations during high-

pressure situations, and across cultural lines while minimizing misunderstandings and fostering mutual respect.

3. Cultivate Advanced Leadership

Leadership and communication training emerged as nearly equally important, suggesting the need for airfield operations officers to excel in both interpersonal and management skills. Effective leadership transcends the ability to command. It involves inspiring teams, making informed decisions rapidly, and adapting to the dynamic ACE environment. The incorporation of strategic development, emotional intelligence, and scenario-based exercises in leadership training could significantly enhance decision-making skills when mission-type orders or guidance are insufficient. Leadership requires the ability to make quick decisions and manage teams effectively, inspire and motivate others, and navigate the complexities of ACE's operational environment. Without the ability to assess situations quickly and make informed decisions, significant consequences could result in loss of lives or mission failure. Officers must have the ability to adapt to changing situations to lead the airmen who will look to them for practical guidance or assistance in problem-solving. As mentioned in Chapter I, ACE is an iterative process where leadership courses in innovation, strategy development, personnel management, scenario-based leadership challenges, and emotional intelligence could prepare officers to make informed decisions when guidance is lacking. Leadership is another competency that could benefit from mentorship programs of pairing less experienced officers with seasoned leaders with firsthand insight to further develop 13M officers for their role in ACE operations.

4. Better Safe than Sorry: Prioritize Safety Training

While fewer officers prioritized safety, its importance cannot be overstated, particularly for a smaller yet focused group of officers who prioritize the mastery of procedures and protocols, particularly those concerning hazardous materials handling. Compared to every other category, the lower number of respondents implies a perceived adequacy in existing safety measures, yet it underscores a potential blind spot of 'you don't know what you don't know.' Those confident in ACE may be unaware of

additional responsibilities due to a lack of guidance on their role and expectations. Safety training, although less emphasized, should be considered alongside the strategic and operational levels to provide 13M officers with clearer insights into their roles and the larger context of their operations. It should be comprehensive, addressing the immediate practicalities of safety and incorporating a deeper understanding of the strategic operational environment. Further, this clarifies ACE's function and purpose within the broader scope of military operations.

5. Expand Horizons and Address "Other Observations"

The 'other' category, chosen by ten respondents, reflects diverse and specific training needs that extend beyond the core options available, suggesting the need for flexible, tailored training for 13M officers. These range from practical task preparation to understanding joint operations, suggesting a demand for more personalized and varied training programs. Notably, there's a call for the expansion of the Landing Zone Safety Officer course and enhanced logistical training, as previously mentioned.

Including the comments previously mentioned, the list below summarizes the comments provided by the respondents who selected 'other' are listed below:

1. Contingency Response Experience: One respondent noted the challenge of transitioning from a structured environment to more autonomous ACE operations, emphasizing the need for training that fosters creative and critical thinking.
2. Higher-Level Operational Understanding: Strategic and operational level training was mentioned as crucial for understanding command structures and how ACE fits within overall operational plans, indicating a desire for training that bridges tactical execution with strategic comprehension.
3. Joint Operations Knowledge: Understanding the AO role in joint environments was identified, suggesting joint operational training is necessary.

4. Networking and Relationship Management: Emphasis was placed on networking skills, with a call for training or initiatives to encourage active engagement with various stakeholders on the airfield, highlighting the integrative role of airfield operations officers.

5. Landing Zone Safety Officer Program Expansion: The expansion of the LZSO program was proposed, with the suggestion to make it a required course for airfield operations officers to align with ACE and MCA concepts.

6. Logistics Training: Logistical training for the deployment of airfield operations teams was seen as vital, pointing to a need for more comprehensive training in deployment logistics and sustainment.

7. Practical Task Preparation: Respondents expressed a desire for training that covers real-world tasks and scenarios, indicating a need for more hands-on, practical training experiences.

8. Cross-Training in Additional Specialties: There was a call for cross-training in additional specialties that airfield operations officers may be expected to understand or assist with, reflecting the multi-faceted nature of ACE.

9. Mission Generation Understanding: A deeper understanding of mission generation and its effects on operations was sought, highlighting a gap in training regarding the broader impact of airfield operations.

10. Clear Role Expectations in ACE: Respondents expressed difficulty specifying training needs due to varying interpretations of ACE across different commands, suggesting a need for clear guidance on the role of airfield operations officers in ACE operations.

I. VISUALIZATION OF RESPONSES

Responses to the text-option question requesting additional comments from 38 of 42 participants were used to create the word cloud in Figure 18. In conjunction to

offering the ability to pull quantitative analysis graphs and charts through their website, Qualtrics also has a special feature to create word clouds to visualize data. Utilizing this tool, a word frequency query generated a word cloud to visually depict the key themes surrounding ACE and its integration within the airfield operations community. The more often the word or phrase was used, the larger and more pronounced it would appear in the word cloud. This was a useful product to quickly understand the key themes of the findings.

Figure 18. Visualization of key themes about the integration of ACE into the airfield operations community

This self-assessment provides valuable insights into the training needs of 13M officers, indicating areas of confidence as well as those requiring reinforcement. A holistic approach to training program development is recommended, one that aligns technical skills, leadership, safety, and communication (among others) with the unique demands of ACE operations. By addressing these self-identified gaps, the 13M community can be more effectively prepared for the complex challenges of future operations.

J. SELF-ASSESSMENT AND SKILLS ASSESSMENT

Building upon the previously identified training and education needs of 13M officers, this section refines the focus to the specific elements of the ACE framework, aligning education and training with the nuanced requirements of ACE operations. These results show a gap in holistic comprehension of ACE operations among 13M officers, directly impacting the ability to manage airfield operations effectively in support of combat airpower. This survey question inquired which elements of the ACE framework officers would most like to expand their knowledge on, providing five options: posture, command and control, movement and maneuver, protection, and sustainment. The findings show a prioritized preference toward learning more about command and control and movement and maneuver, indicating their perceived criticality in ACE operations. In contrast, sustainment and posture are also recognized for their roles in ensuring long-term operational capability and strategic positioning. Protection, intriguingly, garnered the least interest.

The strongest interest is split equally between command and control and movement and maneuver, with these elements receiving the highest interest at 25% and 25%, respectively (Figure 19). Without surprise, these two elements are critical for effective ACE operations. The interest in sustainment and posture, 19% and 18%, respectively, indicate an awareness of the role they play in long-term operational readiness and strategic positioning via logistics to maintain operational readiness. The relatively low interest in protection, 13%, may reflect confidence in existing defensive measures or a potential area for increased attention in future training, likely the latter. Despite protection typically falling under the security force's specialty, ACE operates with light, lean, and agile teams, therefore, airfield operations officers should be familiar with these requirements and understand the capabilities of their team.

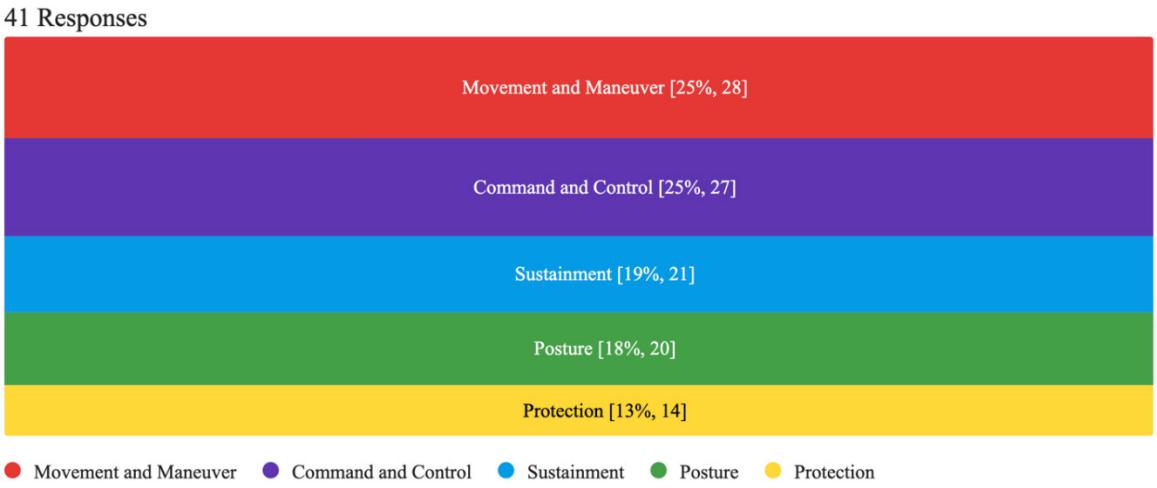

Figure 19. Distribution of 13M education and training preference of elements within the ACE framework

1. Movement and Maneuver

Movement and maneuver within the ACE framework are central to achieving and fighting from positions of advantage, granting forces the agility necessary to outpace adversary actions. The concept extends beyond mere geographic relocation, and it is a strategic capability designed to disrupt an adversary's decision-making cycle by imposing multiple dilemmas through dynamic positioning and repositioning of forces. The interest from 25% of respondents in this element underscores a recognition of the need for tactical finesse coupled with the operational acumen to navigate and position forces, both on the ground and in the air. The ability to maneuver effectively grants an unparalleled advantage in theaters like the Indo-Pacific, where the geographical scale and political complexity demand nuanced force deployment and withdrawal strategies. The emphasis here implies a desire for how 13M officers can apply tactical agility and strategic positioning in practice.

ACE maneuver is characterized by expanding operational footprints and securing access throughout a theater, providing strategic flexibility, deterring adversaries, and strengthening partnerships with allies. It encapsulates the movement of 13M officers to dispersed locations, predetermined to enhance mission generation efficiency and simplify sustainment logistics; however, this maneuver strategy is not solely for positioning

advantage as it serves as a force multiplier that allows combat and support elements to project combat power forward for offensive objectives as necessary.

For airfield operations officers, this translates to an increased involvement in force posturing and repositioning, offering insights critical during the planning and execution phases. Airfield operations knowledge is essential for developing dispersal plans that not only enhance operational flexibility but also ensure the force's ability to sustain momentum through distributed control and mission command principles once forces are dispersed. Further, the role of airfield operations officers extends to augment dispersal operations with other passive defense measures, such as hardening and camouflage, to maintain operational tempo and protection. Their active participation in the development of theater operation plans is indispensable for ACE's success. This includes being intimately involved in the crafting of time-phased force deployment data, which is crucial for adequately equipping and personnel posturing. As 13Ms become more integrated into the planning cycle, their expertise in air mobility and logistics planning is crucial for optimizing the use of commercial and military transportation assets, ensuring forces move with the required tempo to achieve operational objectives.

Mastering movement and maneuver within the ACE framework means that airfield operations officers understand not just the tactical aspects of force repositioning but also the strategic implications of transport logistics, force dispersal, and the integration of commercial support to reduce the burden on military assets. With a comprehensive grasp of these concepts, airfield operations officers will be well-prepared to contribute effectively to ACE operations, maintaining the initiative and operational tempo that are critical for success in modern combat environments.

2. Command and Control (C2)

C2 within the ACE framework is predicated on the ability to maintain command across domains amidst the inherent challenges of large-scale combat operations, which is magnified when forces are dispersed from enduring locations, necessitating a C2 architecture that is both resilient and adaptable. The ACE doctrine underscores the philosophy of centralized command, distributed control, and decentralized execution,

designed to ensure that all Airmen can translate command information into timely and scalable action, irrespective of the operational environment. Equally significant to respondents is command and control, with its centrality to ACE operations emphasizing the need for decisive leadership and clear communication. This element ensures a seamless translation of strategic directives into coordinated actionable ground operations. The attention on this element reflects an aspiration for enhanced clarity in decision-making processes, lines of authority, and operational oversight, each is critical in making rapid decisions in a dynamic ACE environment. Training for 13M officers should encompass not only the employment of communications equipment to support distributed operations but also the development of the capability to operate autonomously in accordance with the commander's intent. The reality of potential disconnects from operational C2 networks in ACE operations requires that 13M officers understand how to be proficient in self-sufficiency, with the expectation of limited guidance from higher echelons.

The integration of Joint All-Domain Command and Control and mission command is critical in enabling operational advantage and convergence of effects across domains. This is operationalized through the communication of clear commander's intent, issuance of mission-type orders, and the establishment of conditions-based and delegated authorities. Such measures empower operational commanders to generate combat airpower effectively within contested, degraded, or operationally limited environments. Forces operating under ACE are anticipated to face connectivity losses; therefore, it is imperative that airfield operations officers are proficient in executing the mission based on the commander's intent and local situational awareness. The codification of conditions-based authorities and the delegation of decision-making to the lowest appropriate level are strategic moves to capitalize on emergent opportunities and maintain operational initiative.

In addressing the complexities of distributed control, it is essential that elements of operational, tactical, and administrative control are predefined and adaptable to shifting circumstances. Effective ACE execution demands extensive coordination across service components and with industry partners, necessitating that relationships and

agreements are established and exercised well in advance of conflicts. The ACE doctrine also highlights the necessity for robust, redundant, resilient C2 methods. Communications infrastructures that are mobile, survivable, secure, and sustainable are indispensable for ACE operations; they must ensure uninterrupted access to DOD networks and voice services, even in austere environments. Preparedness for communication challenges involves having multi-modal primary, alternate, contingency, and emergency plans well-rehearsed and understood by 13M's and their teams.

3. Sustainment

Sustainment is a critical component of ACE operations, presenting unique challenges to the existing logistics and transportation frameworks within the Air Force. The shift from a 'pull' system, designed for efficiency in a connected environment, to a 'push' system suited for distributed mission effectiveness requires 13M officers to adapt and innovate. 13M officers must be prepared to anticipate limitations in standard distribution and leverage adaptive logistics systems to support operations in contested environments. Recognized by nearly one-fifth of the participants, sustainment shows a need for 13M officers to understand the logistics and support necessary for prolonged operations to account for the challenges associated with maintaining a mission-ready team. This interest may point to a recognition of the complexities associated with logistics, resupply, and the maintenance of forces, particularly in contested or resource-constrained environments. More specifically, 13M officers are likely seeking insights into innovating sustainment strategies that ensure continuity and efficiency of operations.

For an airfield operations officer, this means overcoming the transformation of supply systems, taking inventory of the resources that are prepositioned, and that war reserve materiel is operationalized to demonstrate logistical depth and readiness. Their role expands to include infrastructure innovation, where they must advocate for and implement solutions that support the scaling of operations across an increasing number of dispersed locations. Predictive modeling becomes an essential tool for 13M officers to optimize sustainment, taking into account mission design series and theater-specific data, geographical constraints, and environmental considerations. They are tasked with

analyzing equipment commonalities to reduce redundancy in force posture and sustainment efforts and creating a diversification of sustainment strategies, such as leveraging support agreements, contracted support, and host nation resources, which also fall within their purview. These strategies not only reduce the load on traditional logistics systems but also allow for 13M officers to contribute to the unpredictability of maneuvers and more efficient use of available resources.

In the context of ACE operations, where dispersed sites and a broad operational area are the norms, 13M officers play an informative role in scaling sustainment operations, central to the development of sustainment plans that focus on aircraft sortie generation and the execution of implied tasks. This includes the facilitation of airlift and sealift for resupply, execution of base operating support functions, and the contracting of local services, supplies, and equipment.

4. Posture

Illuminated by the ACE doctrine, posture is the bedrock upon which the readiness and responsiveness of forces are built.[43] It represents more than just the physical positioning of forces; it encompasses a state of strategic readiness and the ability to rapidly transition to operations across various locations. An effective posture goes beyond mere deterrence, it is the art of being strategically transparent while remaining operationally enigmatic, providing commanders with a spectrum of force employment options and reducing operational risks. The survey results indicating an 18% interest in posture suggest that while there is a foundational understanding of its importance, there may be an underappreciation of its complexity and criticality. Posture is not a standalone element; it is intricately linked to all other ACE framework elements and is pivotal in establishing a credible deterrent to conflict. It involves the calculated distribution of forces, both assigned and follow-on, to advantageous positions that support the execution of operational plans. This requires robust and resilient locations capable of supporting further dispersal and maintaining interoperability across multiple functions.

[43] U.S. Air Force, *Agile Combat Employment*.

Posture's impact stretches across tactical, strategic, and political arenas, complicating an adversary's targeting process and increasing the demands on their offensive capabilities. This is achieved through a network of international agreements that enhance access, basing, and overflight opportunities, reinforcing alliances and expanding operational locations. It is this dynamic interplay between diplomatic engagements and operational readiness that underlines posture's significance in ACE doctrine. In recognizing that operational unpredictability is enabled through the agility of forces, posture facilitates the distribution of operations from enduring locations to more austere and potentially less predictable contingency operating locations. This understanding aligns with the need for risk management strategies that balance force survivability with the tempo of combat operations, taking into consideration the proximity to threats and the need to rapidly re-task operational capabilities.

To effectively enhance the 13M officers' grasp of posture within the ACE framework, training must address the nuances of establishing and maintaining a posture that offers both strategic deterrence and operational flexibility. This includes a comprehensive appreciation for infrastructure development, pre-positioning of materials, scalable logistics, resilient communications, and optimization of forces for large-scale combat operations in a contested environment. Training should also emphasize the understanding of multi-service tactics, techniques, and procedures for airfield opening and the operational benefits of infrastructure improvements and material prepositioning at distributed locations.

Understanding posture as a multi-dimensional concept that extends beyond military tactics into the realms of diplomacy and logistics is crucial for airfield operations officers. The synergy between strategic predictability and operational unpredictability creates a deterrent effect while assuring allies and complicating adversaries' calculations. This strategic nuance must be imparted to 13M officers to fully appreciate the doctrine of posture within ACE operations. The education and training for 13M officers should, therefore, include modules that explore the balance between risk to force and operational tempo. This includes studying the various pre-postured locations and their respective advantages, understanding the intricacies of access, basing, and overflight agreements,

and the application of a "whole of government" approach to strengthen alliances and operational locations.

5. Protection

The traditional paradigm of MOBs regarded as safe havens has shifted dramatically regardless of their location, in ACE operations, they are now exposed to threats that demand unwavering vigilance and robust defenses. Within this complex dynamic, 13M officers are responsible for orchestrating the strategies and measures to safeguard assets and personnel against a myriad of threats. Despite receiving the lowest interest, the importance of protection and understanding how to defend and secure assets and personnel against diverse threats remains significant. The complexity of protection, its specialized knowledge that falls outside the primary expertise or experiences of the respondents, and its integration with other ACE framework elements might explain the lower priority given to it. Effective protection measures require a deep understanding of posture for strategic positions, sustainment to counter continuous operations, and movement and maneuver to evade or counter threats. The respondents may not fully realize the interplay between these elements.

13M officers understand that a combination of active and passive defenses is imperative to counter threats across all domains. Their expertise is instrumental in crafting protection strategies that blend proactive measures with resilient responses, enabling forces to operate effectively in contested environments. Protection requirements, including base defense and defensive counter air, are meticulously informed by operational risk assessments, mission requirements, and the available protection capability and capacity. Intelligence support becomes a linchpin of ACE operations, and 13M officers actively engage in proactively providing planners and commanders with critical information for quality basing and risk mitigation decisions. They ensure a continuum of intelligence and counterintelligence activities, guiding commanders' risk assessments during reactive maneuvers or other protection actions. 13M officers collaborate closely with planners and the supporting contract activities to develop and

maintain actional information related to airspace and other operational contracts in the region.

In this comprehensive examination of the ACE framework and the roles of 13M officers within it, the self-assessment and skills assessment reveal a critical need for tailored education and training to address the nuanced requirements of ACE operations. Among the ACE framework elements, command and control and movement and maneuver are of the strongest interest, emphasizing the importance of tactical finesse and strategic positioning. While sustainment and posture follow closely, 13M officers are keen to innovate sustainment strategies and understand the complexities of posture for long-term operational readiness. Notably, protection, though of lower initial interest, remains a significant component demanding unwavering vigilance and robust defenses, with 13M officers playing a pivotal role in safeguarding assets and personnel against diverse threats, ensuring the safe and successful execution of ACE operations.

K. SUMMARY OF KEY FINDINGS

The survey analysis, which engaged 13M officers to assess their readiness and preparedness for ACE operations, yielded valuable insights despite its 25% response rate, with 42 participants out of 152 invited. The respondents represent a demographic that aligns with those involved in executing ACE operations (13M3/13M4). Key findings from the survey can be grouped into four categories: familiarity with ACE, ACE education and training shortfalls, application of ACE, and demand derived from 13M officers.

1. Familiarity with ACE

- The majority of 13M officers (61%) reported being very familiar with ACE, while a smaller proportion (37%) indicated being somewhat familiar. However, there was still a small subset (2%) who specified that they were not familiar with ACE, indicating a knowledge gap within the 13M community.

- As time progresses and individuals move through IST and FST into proficiency training, 13M's familiarity with ACE tends to increase.
- While the Multi-Capable Airmen concept was the most familiar ACE enabler, known to 98% of respondents, with tailorable force packages (60%) and mission command (58%) not far behind, one respondent reported unfamiliarity altogether.
- Unsurprisingly, 26 respondents desire more technical training, 12 respondents request more communication training, 11 officers desire more leadership training, and eight respondents acknowledge the need for continued safety training.
- Ten respondents indicated a range of unmet or untapped opportunities to become more familiar with ACE, such as expanding current training certification courses, providing higher-level operational understanding, and introducing joint operations knowledge. Other comments emphasized networking and relationship management, in-depth logistics training, practical task preparation, cross-training, and a deeper understanding of mission generation.
- Respondent's learning preference toward ACE enablers prioritized them in the following order: movement and maneuver (25%), command and control (25%), sustainment (19%), posture (18%), and protection (13%).

2. ACE Education and Training Shortfalls

- Of those who have received ACE education or training, 21 received it on the job, and six gained their knowledge and skills through various methods such as cross-training, deployment, serving in an ACE development role, and exposure through strategic staff positions. 14 officers report not having ACE training.

- ACE education and training are only present on-the-job, or through alternative methods sought by 13M officers, creating an opportunity to formalize and embed ACE doctrine into the IST and FST phases of the 13M training pipeline.

- The self-assessment of 13M officers revealed varying degrees of confidence in their readiness for ACE operations. While some officers expressed definite readiness (24%), others acknowledged certain knowledge gaps (39%), felt uncertain (17%), or doubtful (19%) about their capabilities.

3. Application of ACE

- The frequency with which officers apply their ACE knowledge and skills in practice shows considerable variation. While a small subset (three participants) reported daily engagement, a notably larger number of officers reported infrequent (12 participants) or never (14 participants) applying their ACE knowledge and skills. This disparity indicates potential gaps and points to a lack of ACE proficiency and operational readiness.

- A combined 63% of respondents indicated they engage in ACE-related activities only ‘rarely’ (27.5%) or ‘never’ (35%). This suggests a pressing need for more consistent and regulated involvement in ACE exercises and training events.

- To truly benefit from ACE training, mere theoretical knowledge is insufficient. Engagement with ACE on a recurring basis requires attention, it is not enough for officers to be trained in ACE concepts alone, they must also become proficient through frequency of application.

4. Field-Driven Training Demands

- Officers with a conceptual understanding of ACE theoretical concepts and principles admit to lacking the practical, tactical skills and training necessary to excel in their roles.
- The current education and training infrastructure falls short in adequately preparing officers for the on-ground realities and demands of ACE operations.
- Discrepancies in command awareness led to varied utilization of 13M officers, with some commands effectively leveraging their skill set, while others falter due to a lack of awareness about how airfield operations officers fit into the ACE paradigm.
- 13M officers have highlighted the necessity for clear role definitions and guidance, and tailored training programs that are specific to their roles and adaptable to their needs. They also call for judicious resource allocation and management experience.
- Although the self-assessment of 13M officers conveys confidence in their readiness to support and execute ACE operations, there remains a high level of uncertainty and reservation about their capabilities.

These findings underscore the multifaceted nature of ACE and the operational challenges confronting 13M officers in ACE operations that warrant deliberately structured education and training reforms that are strategically structured, coupled with frequent hands-on application to sustain proficiency and operational readiness. The upcoming chapter will build upon these findings to formulate evidence-based conclusions and offer practical, actionable recommendations aimed at adequately preparing airfield operations officers to adapt successfully to the evolving needs of ACE in order to ensure national security and military readiness.

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V. CONCLUSIONS AND RECOMMENDATIONS

This research has addressed the critical issues of preparing airfield operations officers for the complex and dynamic demands of agile combat employment. The research problem centered around evaluating the readiness and preparedness of airfield operations officers and sought to identify strategies to enhance success in supporting and executing ACE operations.

A. CONCLUSIONS

The findings from the survey analysis revealed that while a majority of airfield operations officers reported familiarity with ACE, there was still a significant knowledge gap within the community and a shortfall in training and proficiency. ACE education and training primarily occurred on the job, presenting an opportunity to formalize ACE doctrine into the 13M training pipelines. Furthermore, varying degrees of confidence and proficiency were identified among officers, indicating a need for targeted training initiatives. Additionally, the application of ACE knowledge among officers varied, with a significant number reporting infrequent or no application. Frequent hands-on experience was found to be crucial for proficiency. Respondents expressed a demand for role clarity, tailored training programs, and a consistent understanding of 13M officer roles across commands.

These findings underscore the complex nature of ACE and the dynamic challenges facing 13M officers. To better prepare airfield operations personnel for the evolving demands of ACE and to ensure national security and military readiness, it is imperative to address the identified knowledge gaps and training shortfalls, coupled with ongoing practical application opportunities. This research laid the foundation for evidence-based conclusions and practical recommendations aimed at enhancing the readiness of officers for their vital role in ACE operations.

B. RECOMMENDATIONS

Addressing the challenges faced by 13M officers in the context of ACE is not just an aspiration; it is a fundamental step to ensuring the success of delivering combat airpower anywhere, anytime. While the preceding chapters illuminated the existing shortfalls among airfield operations personnel in ACE, the next section presents a set of comprehensive strategic recommendations to transform these insights into actionable strategies aimed at equipping officers with the knowledge, skills, abilities, and support necessary to thrive in the dynamic ACE environment. These recommendations encompass a range of measures, with specific strategies accompanying each recommendation on effectively implementing it. Embracing these recommendations can fortify airfield operations capabilities, enhance military readiness, and increase national security.

1. Recommendation for Immediate Implementation: Codify and Publish Expectations

Designate a champion or team of experts to define, develop, and disseminate expectations and operational guidelines for 13M officers, offering clarity in their specific functions and responsibilities within ACE operations reducing variability in their experiences across different commands. This guidance should include roles and responsibilities tailored for 13M officers, providing a consistent understanding, ensuring a cohesive, unified approach, and facilitating seamless collaboration and execution of airfield operations.

Implementation Strategy: Establish a dedicated committee to develop and revise applicable ACE doctrines, the Air Force Manual 13–204 series, and 13MX CFETP. Dissemination is critical to ensuring these guidelines are readily accessible to all 13M officers.

2. Recommendation for Immediate Implementation: Adapt Formalized Training Programs

To bridge existing gaps in education and training while maintaining readiness for ACE operations, adapt established training programs to formalize ACE integration into each phase of an airfield operations officer's career:

- Introduce ACE during Initial Skills Training (IST): Restructure IST to introduce foundational ACE doctrines, such as purpose, objectives, enablers, and framework, tailored to the role of airfield operations officers.

- Continue ACE training through Follow-on Skills Training (FST): Expand on the foundational ACE education introduced during IST by developing an ACE Qualification Training Package (QTP) to document hands-on knowledge, skills, and abilities.

- Expand and integrate into proficiency training: Establish an ACE familiarization requirement, like a local area knowledge guide, to be completed within a set timeline of arriving at a new duty station.[44] The intent of the ACE LAK is to quickly orient the officer to the expectations and capabilities of that unit, distinguishing its differences from other units.

- Design and offer development training opportunities: In addition to the LZSO course, offer development training opportunities that align with ACE and MCA concepts to enhance safety and retain 13M proficiency in ACE operations. Potential opportunities include ACE exercise and training events, TDY courses (e.g., contingency response fundamentals, mission generation, etc.), and ACE conferences (not currently available). Additional recommendations are continued in the holistic and tailored training recommendation.

[44] LAK, within the 13M community, refers to a "local area knowledge" guide that typically includes detailed knowledge of the station's assigned area of responsibility. For the purposes of ACE, this LAK should include detailed knowledge of the station's ACE capabilities, roles and responsibilities, location and equipment performance characteristics, general processes and procedures, and any requirements unique to that station.

Implementation Strategy: Collaboration between career field leaders, instructors, and training curriculum developers to adapt and revise formalized training programs curriculum, mandatory training requirements, and measures of performance. Collaborate with subject matter experts to develop and integrate the previously mentioned training elements into all formalized training, with clear milestones, objectives, and measures of performance for each phase.

3. Recommendation for Immediate Implementation: Develop and Integrate Holistic and Tailored Training Opportunities

Develop tailored training programs to address the diverse needs and comprehensively prepare officers for the multifaceted demands of ACE operations. Initiatives that seamlessly integrate technical proficiencies with leadership, communication, safety, and logistical skills, among others. Collaborate with subject matter experts to design a comprehensive ACE training curriculum implemented through a tiered approach correlating to the 13M CFETP. Revise 13M training to embed dedicated ACE modules into the existing training pipeline. Consider establishing skill experience identifiers awarded to officers upon reaching predetermined milestones of ACE education, training, and application. Further, designate requisite tailored training courses to specific assignments to ensure proficiency and development training needs meet total force requirements.

- Design development training opportunities that teach requisite foundational ACE skills, such as air task forces, posture, C2, movement and maneuver, and protection, and how intertwined each is to the other.
- Additional courses not currently available that would greatly enhance success include familiarization with mission command, mission-type orders, and theater-specific planning factors.
- Outside of traditional 13M roles and responsibilities, pertinent courses include networking and relationship management and civil engineering knowledge such as airfield damage repair capabilities and timelines, pavement types and worst-case alternatives, and materials.

- Expose 13M officers to joint operations knowledge and networking skills during IST and FST to develop holistic, joint-minded officers ready to work with diverse teams. Training should include foundational joint concepts, such as joint all-domain operations and joint all-domain command and control, joint exercises, and cross-training opportunities—crosstalk with other services to establish programs and integrate joint operations training at local levels. Organize networking events and workshops and facilitate relationships with various stakeholders, including personnel from all services, government agencies, and industry partners.
- Cultivate decentralized leadership, integrate, and implement effective leadership principles that enable 13M officers to lead, and foster communications and trust with their teams.
- Offer specialized training, including comprehensive safety, crisis communication, cultural competence, and joint fundamentals, and conduct decision-making simulations that mimic ACE scenarios to ensure effective communication and mission command across domains.
- Safety training should be comprehensive and hands-on, address both immediate practicalities, and provide a deeper understanding of safety within the broader strategic context of ACE.
- Provide comprehensive logistical and sustainment training in time-phased force deployment data knowledge, deployment logistics, and sustainment of airfield operations teams while learning how to allocate resources effectively through various methods and considerations.
- When organizational solutions are not practical, engage experts from the industry to conduct intensive hands-on sessions or seminars with emerging technologies or current equipment utilized in ACE. Accomplish through road shows or the creation of certification courses.

Implementation Strategy: Establish two teams; one team to develop the curriculum of ACE modules and another to identify which tailored courses should be prioritized and mandated as requisites for specific assignments. Both teams should identify a way to track officers' progress in ACE proficiency and codify it for implementation.

4. Recommendation: Optimize ACE Exercise and Training Frequency

Increase and regulate the frequency of ACE exercises and training events through structured training schedules, practical experience, and hands-on application. Cultivate a heightened skill set that amplifies confidence and readiness through routine exposures and immerse officers in dynamic environments, encouraging the practical application of their ACE knowledge.

- Empower and encourage officers to exploit their autonomy at local levels by coordinating across their network to initiate installation-wide training scenarios.

- Invite officers to observe and/or participate in the planning or execution phases of training opportunities in various theaters. Narrow focus to a specific assigned theater or lack of training opportunities could lead to regression of knowledge, skills, or abilities learned.

- Cross-service engagement in ACE-like operations reinforces foundational concepts and practical applications of an officer's skills while having the added benefit of another perspective.

Implementation Strategy: Consider an 'ACE Champion' to develop incentive programs that encourage units to increase their frequency of ACE training at the local level and serve as a liaison between services to advertise opportunities for proficiency through participation in ACE events globally.

5. Recommendation: Build and Diversify ACE Competence through Structured Mentorship

Revitalize the major command mentorship program by appointing multiple mentors in each command with ACE experience. This could mirror the command mentor program, instead, it would create diverse mentorship opportunities and introduce a feedback mechanism between ACE mentors and career mentors.

- Create a structured, formal or informal, mentorship program that pairs experienced 13M officers with junior officers to provide guidance, share knowledge, and offer career advice.
- Offer diverse opportunities, including cross-service, career-specific, and leadership mentorship. Influence a feedback mechanism to assess the effectiveness of the mentorship program to gather inputs from mentors and mentees to make continuous improvements.
- Encourage regular check-ins to discuss progress, challenges, and areas for improvement to ensure the program and relationships remain productive and beneficial. Implement a robust feedback mechanism for refining training programs.

Implementation Strategy: Mirror the major command mentor program by pairing multiple ACE-experienced officers with less-experienced officers (potentially using skill experience identifiers described in recommendation three). Utilize the mentoring connections platform on MyVector as the primary means for documenting interaction (for future feedback metrics) and regularly assess the mentorship program's effectiveness.

C. RECOMMENDATIONS FOR FUTURE RESEARCH

During the survey, a significant amount of data was collected and analyzed on various aspects of 13M officers' ability to successfully execute ACE operations. To further enhance the effectiveness of airfield operations officer's development and military

operations, future research is needed to assess and continually improve the training program to remain ahead of emerging challenges and opportunities.

1. Assessment of Training Program Efficacy: Conduct research to evaluate the long-term impact of the recommended training enhancements on 13M officer performance and success.
2. Emerging technologies and tactics: Explore the integration of emerging technologies and tactics into ACE operations and assess their impact on 13M readiness.
3. Cross-Branch Collaboration and Joint Interoperability: Investigate strategies to enhance collaboration between military branches and improve joint interoperability.
4. Advocacy and awareness: Research how advocacy and awareness initiatives can promote the expertise and capabilities of 13M officers within the military and beyond.
5. Multicultural Competence: Examine the development of multicultural competence among 13M officers and its role in enhancing joint operations.

Future research in these areas will contribute to the ongoing improvement and adaptation of the training program for 13M officers, ensuring that it remains aligned with evolving military needs and challenges. This research will continue to produce highly effective and adaptable 13M officers ready to lead in any environment.

APPENDIX A. SURVEY QUESTIONS

1) What phase of the 13M CFETP are you in?

   a. Initial Skills Training (13M1)

   b. Follow-on Skills Training (13M1)

   c. Proficiency Training (13M3)

   d. Development Training (13M3/4)

   e. Other, please specify: _____

2) When did you complete IST?

   a. Before February 2012

   b. March 2012-November 2019

   c. December 2019-July 2021

   d. After August 2021

3) How familiar are you with Agile Combat Employment (ACE)?

   a. Very familiar

   b. Somewhat familiar

   c. Not familiar

4) How well do you understand ACE's purpose and objectives?

   a. Not well at all

   b. Slightly well

   c. Moderately well

   d. Very well

e. Extremely well

5) What ACE enablers are you familiar with, if any? (click to select; additional comments optional)

a. Multi-Capable Airmen: _____

b. Mission Command: _____

c. Tailorable Force Packages: _____

d. None

6) Have you received ACE training or skills? (select all that apply)

a. Yes, during IST

b. Yes, during FST

c. Yes, on-the-job

d. No

e. Other, please specify. _____

7) How frequently does your unit participate in ACE exercises or training events?

a. Daily

b. Weekly

c. Monthly

d. Rarely

e. Never

8) Do you have the necessary knowledge and skills to perform your airfield operations role in ACE effectively?

a. Definitely not

b. Probably not

c. Might or might not, explain: _____

d. Probably yes

e. Definitely yes

9) What kind of training or education would be most beneficial to your role in airfield operations? (select all that apply)

a. More technical training (e.g., specific equipment operation)

b. More safety training (e.g., hazardous materials handling)

c. More communication training (e.g., team-building, conflict resolution)

d. More leadership training

e. Other, please specify: _____

10) Which elements of the ACE framework would you want to learn more about? (select all that apply)

a. Posture

b. Command and Control

c. Movement and Maneuver

d. Protection

e. Sustainment

11) Please provide any additional comments or insights you would like to share regarding Agile Combat Employment (ACE) and its integration within airfield operations.

12) This is the final question. Optional: If you would like to provide contact information for further discussion or clarification based on your answers, please do so below. Your survey responses remain anonymous and are not directly tied to this contact information.

APPENDIX B. SURVEY INVITATION EMAIL

Hello 13M Nation,

You are invited to participate in a short 10-question academic survey focusing on Agile Combat Employment (ACE) within the United States Air Force, specifically tailored for individuals in the 13M Airfield Operations career field. Your insights and experiences are invaluable in helping us better understand the intersection of ACE and airfield operations, aiming to enhance the training pipeline and improve the effectiveness of ACE implementation.

Background and Benefits: As part of ongoing efforts to refine airfield operations training and adapt it to the evolving demands of modern warfare, this survey seeks to gauge your familiarity with ACE, its objectives, and your level of ACE-related training. By aggregating your responses, we aim to identify gaps in the 13M training pipeline related to ACE and pinpoint training deficiencies that can be addressed to enhance your readiness for ACE scenarios. Your valuable participation in this survey will significantly contribute to ongoing improvements in airfield operations training within the ACE framework, directly enhancing the quality of training available to personnel in the 13M career field.

Survey Questions: The survey consists of ten questions designed to gather specific insights from your experiences and perspectives. Your responses will be kept confidential and contribute significantly to developing strategies to strengthen airfield operations capabilities within the ACE framework. This survey will be active until October 20, 2023.

How to Participate: Participation is voluntary and anonymous. Your responses will be analyzed as part of an academic study and will not be linked to your identity. To take part in the survey, please follow the link provided below:

Follow this link to the Survey:
https://navalpostgradfedramp.gov1.qualtrics.com/jfe/form/SV_bk1NFmSLzvQdRtQ

Or copy and paste the URL below into your internet browser:
https://navalpostgradfedramp.gov1.qualtrics.com/jfe/form/SV_bk1NFmSLzvQdRtQ

If you have questions regarding this survey, please contact the IRB at IRB@nps.edu.

Thank you!

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