

THE AIR FORCE INSTALLATION OPERATIONS CENTER: HOW WILL THE
INSTALLATION OPERATIONS CENTER ASSIST THE DEPLOYED
COMMANDER TO INTEGRATE THE UNIT LEVEL
MISSION INTO THE JOINT FIGHT?

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General Studies

by

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE AIR FORCE INSTALLATION OPERATIONS CENTER: HOW WILL THE INSTALLATION OPERATIONS CENTER ASSIST THE DEPLOYED COMMANDER TO INTEGRATE THE UNIT LEVEL MISSION INTO THE JOINT FIGHT? by MAJ Jason R. Combs, 86 pages.

The United States (US) military is undergoing a tremendous transformation. Much of the change uses technology to improve command and control (C2) of military forces. The end state gives the commander the ability to command a more flexible and adaptive force. Since the early 1990s, the US Air Force has focused much of its effort on command and control networks to enable centralized control and decentralized execution. The Air Operations Center used in Desert Storm was a major step towards improved C2 in the USAF. In the late 1990s a wing level command and control center was developed. This center, now the Installation Command Center (referred to as the Installation Operations Center (IOC) in this paper) is being incorporated into Air Force doctrine. The research question focuses on what the installation operations center provides to the deployed commander. Using doctrine and history as a baseline and fourteen criteria for measurement, the installation operations center greatly enhances the deployed commander's ability to integrate the unit mission into the joint fight. The installation operations center provides the commander with a tailorable command and control center, with better trained personnel, greater flexibility in personnel to run the center, significantly better situational awareness for local and area of responsibility operations, and also improves information sharing and integration vertically and horizontally. The IOC will substantially increase the deployed commander's combat capability.

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TABLE OF CONTENTS

	Page
MASTER OF MILITARY ART AND SCIENCE THESIS APPROVAL PAGE	ii
ABSTRACT	iii
ACKNOWLEDGMENTS	iv
ACRONYMS	viii
ILLUSTRATIONS	xiii
TABLE	xiv
CHAPTER 1. INTRODUCTION	1
Background and Context	2
Problem Statement	4
Assumptions	6
Definitions	6
Physical and Organizational Description	9
History and Evolution of the IOC	13
Limitations	13
Need for the Paper	14
Research Questions	15
How Does the IOC Integrate the Unit Level Mission?	16
How Does the IOC Enable Improved Joint Fighting?	16
CHAPTER 2. LITERATURE REVIEW	19
Introduction	19
Governing Directives	19
Research Papers	20
Development Briefings	21
News Releases	24
CHAPTER 3. RESEARCH METHODOLOGY: DEFINING WHAT THE DEPLOYED COMMANDER NEEDS	27
Introduction	27
How Does the IOC Assist the Deployed Commander?	27
Expeditionary Infrastructure	28
Standardized Command and Control Node	29
Total Complement Functionality (C2, Planning, Support, Etcetera)	30

Air Base Defense Integration While Continuing the Mission	31
Similar Combat and in Garrison Practices and Structure	31
How Does the IOC Integrate the Unit Level Mission?	32
Does the IOC Provide a Doctrinal Node for External Connectivity?	33
Are Fewer Assets Required?	33
Is the Same Mission Accomplished in Less Time?	34
Does It Improve Information Collection, Analysis, and Distribution?	34
How Does the IOC Enable Improved Joint Warfighting?	35
Does the IOC Provide Standard C2 Node for Joint Integration	36
Sharing of Information (Horizontal and Vertical)	36
Clear C2 for Air Base Bed Down and Opening	37
Impact on the Kill Chain	37
CHAPTER 4. ANALYSIS	39
Introduction	39
Does the IOC Assist the Deployed Commander?	39
Expeditionary Infrastructure	40
Standardized Command and Control Node	41
Total Complement Functionality (C2, Planning, Support, Etcetera)	43
Air Base Defense Integration While Continuing the Mission	46
Similar Combat and in Garrison Practices and Structure	47
How Does the IOC Integrate the Unit Level Mission?	49
Does the IOC Provide a Doctrinal Node for External Connectivity?	49
Are Fewer Assets Required?	50
Is the Same Mission Accomplished in Less Time?	51
Does it Improve Information Collection, Analysis, and Distribution?	52
How Does the IOC Enable Improved Joint Warfighting?	53
Does the IOC Provide Standard C2 Node for Joint Integration	54
Sharing of Information (Horizontal and Vertical)	54
Clear C2 for Air Base Bed Down and Opening	55
Impact on the Kill Chain	56
CHAPTER 5. CONCLUSION	58
Introduction	58
Findings and Recommendations	60
1. In Garrison Training Will be a Tremendous Challenge, But Can Be Gapped	60
2. Clear C2 Guidance Needs to Be Provided in Joint Doctrine to Achieve Joint Integration	61
3. The IOC Should Be Run by Someone Very Skilled and Who Is Painful to Give Up	62
4. Improved Visibility of Current Operations May Increase the Potential to Micro Manage	62
5. Standard Operating Procedures for Briefings, Format, Battle	

Rhythm, Etcetera Need to be Developed for the IOC	63
6. The IOC Can Provide an Excellent Opportunity to Gain Experience to Later Operate in or Run an AOC	63
BIBLIOGRAPHY	65
INITIAL DISTRIBUTION LIST	70
CERTIFICATION FOR MMAS DISTRIBUTION STATEMENT	71

ACRONYMS

Note: Most acronyms can be found in Air Force Doctrine Documents and Joint Publications. Slight differences are annotated with AFDD and JP definitions.

A-1	Manpower and Personnel (Note different staffs may have different leading letter such as J-1, G-1 or S-1)
A-2	Intelligence
A-3	Operations
A-4	Logistics
A-5	Plans
A-6	C4 Systems
A-7	Installations and Mission Support (AFDD2 Draft 2005)
A-8	Programs and Financial Management (AFDD2 Draft 2005)
A-9	Analysis and Assessments (AFDD2 Draft 2005)
AAGS	Army Air Ground System
ACC	Air Component Commander or Air Combat Command
AEF	Aerospace Expeditionary Force
AEG	Air Expeditionary Group
AETF	Air and Space Expeditionary Task Force
AEW	Air Expeditionary Wing
AFATDS	Advanced Field Artillery Tactical Data System
AFB	Air Force Base
AFDD	Air Force Doctrine Document
AFELM	Air Force Element (Located at Ft. Leavenworth, KS)
AFI	Air Force Instruction
AFOTTP	Air Force Operational Tactics, Techniques, and Procedures

AMC	Air Mobility Command
AMD	Air Mobility Division
AMDWS	Air and Missile Defense Workstation
AOC	Air Operations Center (JP 1-02, 2005) Air and Space Operations Center (AFDD2 Draft 2005)
AOR	Area of Responsibility
APCF	Aerial Port Coordination Function
ATO	Air Tasking Order
ATO	Air Tasking Order
BCT	Brigade Combat Team
BMC	Battle Management Center
BW	Bomb Wing
C2 & ISR	Command and Control and Intelligence, Surveillance and Reconnaissance
C2	Command and Control
C2PC	Command and Control Personal Computer
CAF	Combat Air Forces
CAOC	Combined Air Operations Center (JP 1-02, 2005) Combined Air and Space Operations Center (AFDD2 Draft 2005)
CAT	Crisis Action Team
CC	Commander
CCW	Command and Control Wing
CGSC	Command and General Staff College (Located at Ft Leavenworth)
CINC	Commander in Chief
CIWS	Close In Weapons System
CJCS	Chairman of the Joint Chiefs of Staff

COD	Combat Operations Division
COMAFFOR	Commander Air Force Forces
CONOPS	Concept of Operations
COP	Common Operating Picture
COTS	Commercial off the Shelf
CP	Command Post
CPD	Combat Plans Division
CRG	Contingency Response Group
CSA	Chief of Staff of the Army
CSAF	Chief of Staff of the Air Force
CSS	Crisis Support Staff
DOC	Designed Operations Capability
DTIC	Defense Technical Information Center
EA	Emergency Action
EAF	Expeditionary Air Force
EEOC	Enroute Expeditionary Operations Center
EFX	Expeditionary Force Experiment
EOC	Expeditionary Operations Center
FADDC2	Forward Area Air Defense Command and Control
FOL	Forward Operating Location
HHQ	Higher Head Quarters
HQ	Head Quarters
IAW	In Accordance With
IG	Inspector General
IOC	Installation Operations Center

ISR	Intelligence, Surveillance, and Reconnaissance
JAOC	Joint Air Operations Center (JP 1-02, 2005) Joint Air and Space Operations Center (AFDD2 Draft 2005)
JEFX	Joint Expeditionary Force Experiment
JFACC	Joint Forces Air Component Commander
JFC	Joint Force Commander
JOPES	Joint Operations Planning and Execution System
JP	Joint Publication
JWICS	Joint Worldwide Intelligence Communications System (JP 1-02)
LCMR	Lightweight Counter Mortar Radar
MAJCOM	Major Command
MCF	Maintenance Coordination Function
MOOTW	Military Operations Other Than War
NLT	Not Later Than
OCF	Operations Control function
OPLAN	Operation Plan
POC	Point(s) of Contact
RMA	Revolution in Military Affairs
ROE	Rules of Engagement
SPINS	Special Instructions
SRC	Survival and Recovery Center
SUP	Supplement
TACS	Theater Air Control System
USAF	United States Air Force
WebTAS	Web-based Timeline Analysis System

WEEMC	Web- Enabled Execution Management Capability
WFHQ	Warfighting Headquarters
WOC	Wing Operations Center

ILLUSTRATIONS

	Page
Figure 1. TACS and AAGS Relationships.....	2
Figure 2. AOC Cross-Function Structure.....	10
Figure 3. COMAFFOR Staff.....	10
Figure 4. WOC Organization	11
Figure 5. EOC Functional Chart.....	12
Figure 6. Command and Staff Relationships between AOC and IOC	24
Figure 7. Connectivity Comparison of WOC and ICC	42
Figure 8. Functions of a Wing Operations Center.....	44
Figure 9. Functions of an Installation Operations Center	45
Figure 10. Air Base Defense Integration (Plug-in C2 Capability).....	47
Figure 11. Command and Staff Relationships between AOC and IOC	53
Figure 12. Information Sharing.....	55

TABLE

	Page
Table 1. Summary of IOC's Contributions to the Deployed Commander	59

CHAPTER 1

INTRODUCTION

This research paper examines the doctrine concept of the Installation Operations Center with the intent to link it to practical application at the Operational and Tactical level of warfare. The primary question is: How will the Installation Operations Center assist the deployed commander to integrate unit level missions into the joint fight?¹ This work intends to develop a better understanding of the IOC within the joint community and will examine what benefits the IOC provides to the commander.

The primary question is broken down into three secondary questions: (1) How does the IOC assist the field commander, (2) How does the IOC integrate the unit level mission, and (3) How does the IOC enable improved joint warfighting? Answering these questions first requires a clear understanding of some basic, but important terms and definitions. A few definitions and figures are necessary to understand the problem area.

Figure 1 shows the two main components of the Theater Air Controls System (TACS) most familiar to Airmen; the Air and Space Operations Center (AOC) and the Wing Operations Center (WOC). It is important to have an understanding of these two operations centers, because the Installation Operations Center ultimately replaces the functions of the WOC and takes on additional functions similar to the AOC.

My qualifications for writing this work include experience as well as access. I ran a wing weapons planning cell modeled after the Mountain Home Air Force Base Operations Center. The Mountain Home model provided the framework which eventually evolved into the IOC. I also ran a deployed beta Expeditionary Operations Center (EOC) within the past year. During this time, I have used the opportunity to take notes and

receive feedback from warfighters up and down the chain concerning the benefits and problems associated with the IOC. Finally, I came from the 7th Bomb Wing (7 BW), which stood up the first IOC beta building with the help of Lt Col Craig Campbell, one of the original points of contact (POC) for the IOC project in 1997.

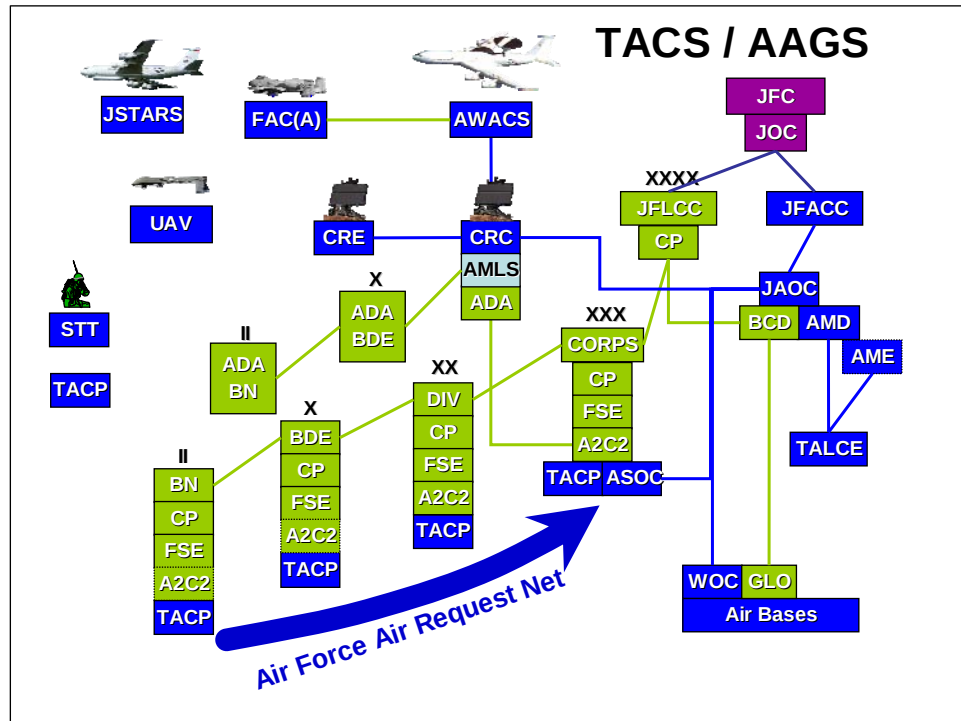


Figure 1. TACS and AAGS Relationships
Source: USAFELM CGSC (C2 Briefing, Slide, Ft. Leavenworth, KS, 2005).

Background and Context

In 1997 the 366th Wing at Mountain Home Air Force Base (AFB), Idaho was challenged with meeting the diverse requirements of the Air Expeditionary Forces (AEF) taskings. To increase flexibility and timeliness Mountain Home developed an integrated planning cell that was modular in nature and functioned at home, enroute and in theater. It was termed an Enroute Expeditionary Operations Center (EEOC).² Since this time, the

idea and project has continued to progress and evolve. In 1998 the concept was tested at Expeditionary Force Experiment (EFX) and it was again demonstrated in 1999 in the joint arena at Joint Expeditionary Force Experiment (JEFX).³ As the project grew, ideas were added to the basic concept. It has evolved from more of a planning cell into a fully integrated command and control (C2) operations center. Improvements, such as a Common Operating Picture (COP) and the addition of a full complement of installation support agencies including logistics, maintenance and support to operations have greatly improved the concept. The end state has given the commander near real-time access to critical information in an organized command and control structure. It also provides the “big picture” to all levels of war fighters. However, these tests have been done on a relatively small beta scale. The 7th Bomb Wing at Dyess AFB recently deployed the latest generation of the EEOC, called the Expeditionary Operations Center (EOC). The concept worked well. The commander was able to execute the combat mission more effectively by having members of his entire team available to provide a near real time assessment of operations. Maintenance, operations, and support worked hand in hand reducing the impact on mission accomplishment due to slow or lack of information sharing.⁴ This led to actionable information being presented to the commander. However, as with any new capability, basic questions arose. Why does the field commander need the EOC? Why were current structures and planning cells not supporting the commander’s needs? How does the field commander use the EOC to better support the joint mission?

Since the deployment of the 7th Bomb Wing, the EOC has been renamed the Installation Operations Center. In addition, doctrine is in draft form to explain the vision

and concept of the IOC. However, it still does not address the specific uses and advantages it provides to joint war fighting.

Problem Statement

The reason for this paper is threefold. First, no one seems to have the same concept or explanation for what the IOC is or does. When discussing via telephone, electronic mail or in reading documents, slightly different perspectives appear. Today there is no single document that provides an “owner’s manual” description of what the IOC is, what it does, and why a commander needs it.

The second reason for the paper is to provide a better understanding of the evolution of the current IOC to Air Force as well sister service components. Third, the paper also helps identify the difference and similarities of many of the command and control structures in the Air Force. There are many systems referenced in doctrine and Air Force Instructions, but some of them are either not defined or defined with only two to three sentences. This paper will attempt to answer some of the questions and provide a reference source by consolidating all of the sources of information about the IOC.

The available literature and documents about the IOC are confusing. Articles, papers, and briefings from Capt Law, Lt Col Campbell, and Lt Col Romrell all explain the IOC concept slightly differently. The reason for this is they represent the evolution and status of the IOC at various stages of its development. One example follows the definition of the IOC. Initially Mountain Home termed the first deployment center as an “Expeditionary Operations Center.” The final version of the EOC was not really concrete until the summer of 2005. At that time, some functions within the EOC were renamed. One of these was the survival and recovery center (SRC), which was renamed the

Emergency Operations Center (EOC). The Expeditionary Operations Center was renamed the Installation Operations Center to reduce confusion. Later in 2006, the IOC was renamed the Installation Control Center. This was changed in the middle of researching and writing this paper. For the purpose of this paper, the term IOC is used to reference EOC, IOC and ICC and has no impact on the conclusions of the paper.

Additional confusion arises to those not as familiar with the Air Force command and control structures. Is the EEOC what the IOC used to be? What is the EOC? Where does a Joint Air Operations Center (JAOC) fit in? Is the battle staff a structure or a group of people? Is the battle staff located in the IOC? Is the WOC the IOC? These are important questions addressed in this work.

There are two key problems related to this thesis. The first is the IOC is known under three names: The Expeditionary Operations Center (EOC), The Installation Operations Center, and the Installation Control Center (ICC). This can cause much confusion. For the purposes of this paper, the operations center discussed changed very little since January of 2005. At this time it was called the EOC, then later in the summer it was renamed the IOC, and then in January 2006 it was coined the ICC. IOC is used as the universal term throughout this paper, as it is the most effective way to bridge the gap between the terms EOC and ICC.

The second problem is keeping the discussion and focus of the paper narrow. Because of the nature of the IOC, it is potentially a tremendous enabler to the joint war fighter. Many more papers can (and should) be written about how the IOC can be exploited to truly change the USAF's battle rhythm.

Assumptions

There are several key assumptions for this paper: (1) the Installation Operations Center will be approved and integrated not only in Air Force Doctrine, but also in Joint Doctrine, (2) the Installation Operations Center will continue to be structured and function in a similar manner to its current configuration (no major changes), (3) the Installation Operations Center will function as it is intended, (4) the Installation Operations Center will be the standard infrastructure for deployed Air Force operations and standing up bare bases, and (5) the definitions and terms used in this paper (from draft USAF doctrine) will remain relatively unchanged. There are slight differences between previous USAF and current Joint Doctrine. Because of update cycles, this trend will most likely continue.

Definitions

Air and Space Operations Center (AOC): The AOC is a deployable command and control center. The overarching mission of the AOC is to effectively and efficiently command and control decisive air and space power in support of joint force commanders worldwide. The AOC is an operational-level C2 center that serves as the focal point for planning, execution, and assessment of air and space operations. The AOC is also responsible for integrating information operations, space, ISR, and weather activities, as well as Theater Air Control System (TACS) elements within the designated operations area.⁵

Battle Staff: When activated the Battle Management Center (BMC) hosts the unit/installation battle staff or crisis action team. Generally, the BMC is comprised of key staff agencies capable of responding quickly to changing situations. Usually the BMC is

formed in direct support of the Disaster Control Group. Day to day this function is dormant.⁶

Command Post (CP): CPs, according to AFI 10-207, 16 May 2003⁷ are: a unit or subunit's headquarters where the commander and the staff perform their activities. In combat, a unit or subunit's headquarters is often divided into echelons; the echelon where the unit or subunit commander is located or from which such commander operates is called a CP. According to PACAFI 10-207, 10 October 2003, a CP is the facility from where the commander and staff direct actions to support the unit's assigned mission. It is the focal point of the unit's operation. It receives, analyzes, displays, and disseminates orders, information, and requests pertinent to the assigned task.⁸

Expeditionary Operations Center (EOC): The EOC is defined as the C2 Node through which an Air Expeditionary Wing commander exercises command and control of aerospace forces.⁹ Note that the EOC is not listed as an operations center in current USAF doctrine. The concept is still in draft form and has recently been changed to Installation Operations Center. For the purpose of this paper, EOC and IOC are synonymous in function and structure except where specifically noted in the text. The key difference is the timeline; the EOC has been renamed as the IOC.¹⁰

Installation Control Center (ICC). For the purposes of this paper, the definition for the ICC is the same as the Installation Operations Center.

Installation Operations Center: The IOC is the installation commander's C2 center and provides the commander the ability to manage and execute all operations. An IOC, like other staff elements, is provided to assist the installation commander and subordinate commanders in the performance of their duties. The IOC will be formally recognized in

Air Force doctrine as the installation commander's C2 center. This concept describes the IOC as the key C2 center for fixed and expeditionary installations. During expeditionary operations the IOC bridges the C2 gap between operational planning (AOC) and tactical execution (AEW).¹¹

Reachback: The process of obtaining products, services, and applications, or forces, equipment, or materiel from Air Force organizations that are not forward deployed.¹²

Wing Operations Center (WOC): WOCs are fixed command and control centers. WOCs consist of some or all of the following functional areas: operations control function (OCF), maintenance coordination function (MCF), aerial port coordination function (APCF), reports, training, and battle management and survival recovery. Major commands (MAJCOMs), in coordination with combatant commanders, should consider and may specify additional peacetime and/or wartime functions for the collocation or removal from the WOC when not required due to mission type.¹³

The Pacific Air Forces (PACAF) definition of a WOC is the wing commander's facility used by the staff in support of contingencies (real world and exercise). It normally includes a C2 element, command section, battle staff, crisis support staff and crisis action team (CSS and CAT), survival and recovery team (SRC), and other planning/support elements as required supporting the mission. When the battle staff CAT is formed, the Command Post supports the WOC, and is an integral portion of the commander's C2 function. Time permitting; all tasking of the WOC is accomplished through a central point. The WOC is also the operations control function for all units assigned or attached to the wing for flying operations. The WOC requires communication with

assigned/augmenting flying squadrons, maintenance control, departure control, the Tactical Air Control Center, Control and Reporting Center, and the Air Support Operations Center. Also, it needs radio communications with its airborne aircraft and the Commanders Advisory Function (CAF).¹⁴

Physical and Organizational Description

The organizational structure of the various operations centers is similar, but has distinct differences. The AOC is headed by the AOC director, who works directly for the Air Component Commander (ACC). Within the AOC, there is a strategy division, a combat plans division, a combat operations division, an ISR division, and an air mobility division (see figure 2). Within the AOC there are also component liaison officers (LNO) which interact with all the divisions. The AOC is not structured into a numbered staff organization. This is confusing to some since the ACC is often dual hatted as the Commander Air Force Forces (COMAFFOR), who has a numbered staff (see figure 3).

	Strategy Division	Combat Plans Division	Combat Operations Division	Air Mobility Division	ISR Division
Component Liaisons					
Area Air defense	Strat Plans Team	MAAP Team	Offensive Operations Team	Airlift Control Team	Analysis Correlation And Fusion Team
Information Warfare		GAT Team			
Space	Strat Guidance Team	ATO Production Team	Defensive Operations Team	Air Refueling Control Team	Targeting/ CA Team
Logistics/Sustainment		C2 Planning Team		Air Mobility Control Team	ISR Operations Team (ISR Mgmt & RFI Mgmt)
Airspace Management	Operational Assessment Team			Aeromedical Evacuation Control Team	PED Mgmt Team
Weather					
Legal					
Rescue Coordination					
System Administration					
Air-to-Air Refueling					
Communication Support					
(Others as needed)				Air Mobility Element	

Figure 2. AOC Cross-Function Structure

Source: HQ USAF, AFOTTP 2-3.1, *USAF Command and Control Nodes* (Washington, DC: HQ USAF, 30 December 2004), 33.

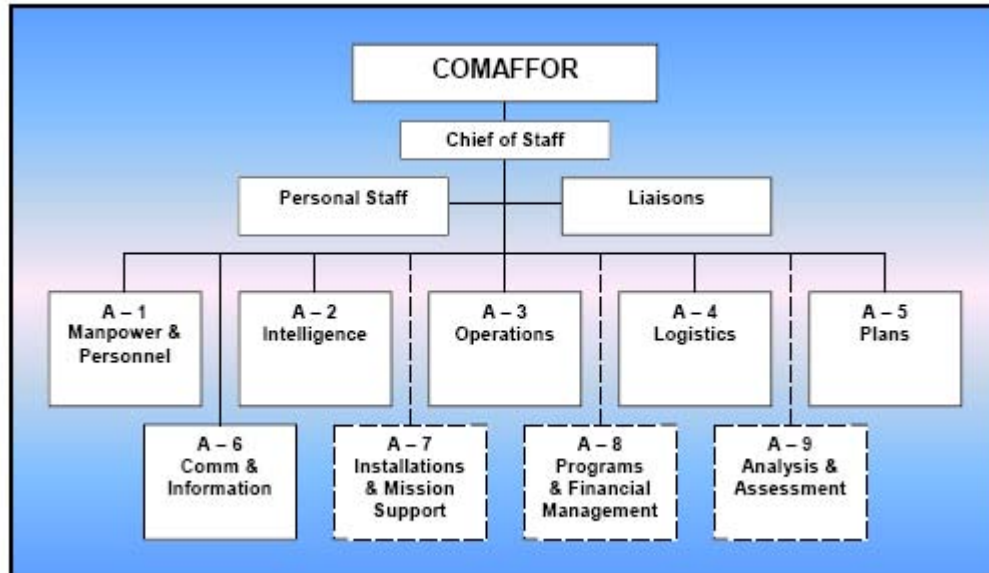


Figure 3. COMAFFOR Staff

Source: HQ USAF, AFDD2, *Operations and Organizations, version 6, Draft* (Washington, DC: HQ USAF, 23 August 2005), 107.

The next organization most Airmen are familiar with is the WOC. This is where a solid structure is difficult to pin point. According to Air Force Tactics, Techniques, and Procedures 2-3.1, 2004, the WOC is a fixed C2 center and required under Title 10, *US Code*. By doctrine definition, this means it is not a deployable C2 center like the AOC. The structure can be modified as needed by the MAJCOM with combatant commander. The baseline structure of the WOC is three functions: the operations control function (OCF), the maintenance control function (MCF), and the battle staff (see figure 4). The difference here is operations and maintenance are full time functions, while the battle staff is set up during crisis or disaster response. By definition, the WOC and the CP are nearly synonymous in function and structure. Later chapters of this thesis will better define the two.

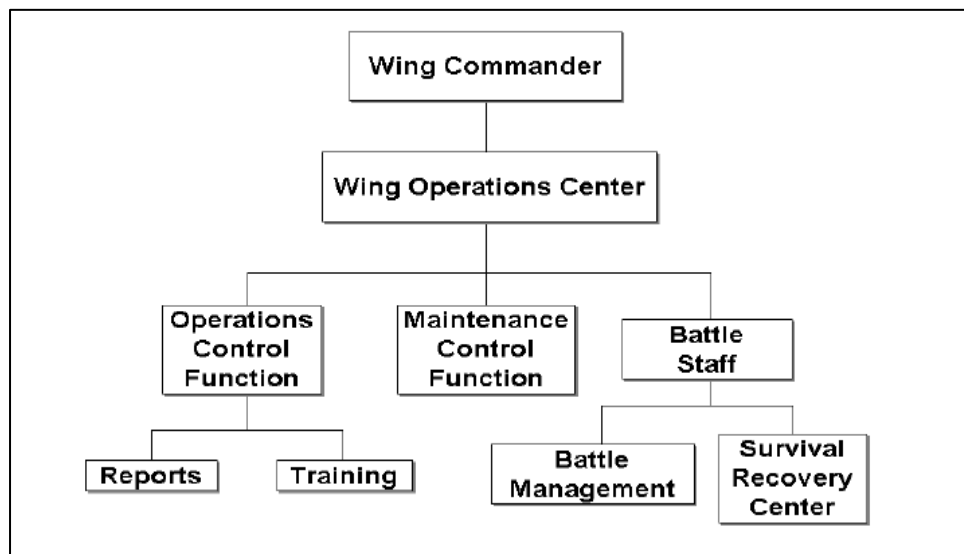


Figure 4. WOC Organization

Source: HQ USAF, AFOTTP 2-3.1, *USAF Command and Control Nodes* (Washington, DC: HQ USAF, 30 December 2004), 7 and 26.

The final operations center which needs to be understood is the IOC. The easiest way to define the IOC is by a picture (see figure 5). In essence, the IOC blends a staff function with divisions similar to those found in an AOC. The IOC is composed of combat plans, ATO plans, mission planning, air mobility, combat operations, weather, space, combat intelligence, targets intelligence, C2 controllers, “911” emergency services dispatch, munitions, the maintenance operations center, the combat support center, materiel management, transportation, fuels, emergency operations center (EOC), and the medical team. The IOC is tailorable to meet mission requirements and structured for use as a fixed or expeditionary operations center.¹⁵

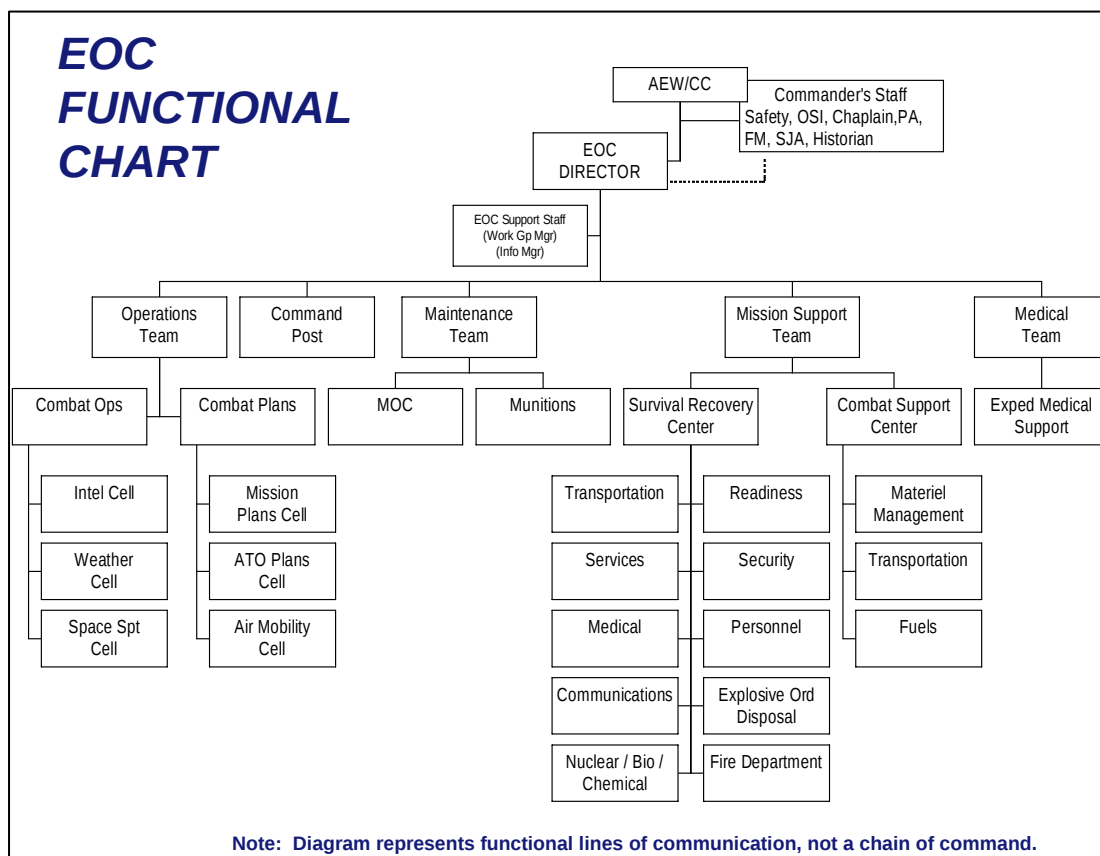


Figure 5. EOC Functional Chart

Source: Rick Folio, Command and Control for AEW Commanders (Briefing, Hurlburt Field, FL: 505 OS, 2005), 5.

History and Evolution of the IOC

The concept of the EOC originated in 366 OSS/OST during the short notice preparations for AEF V [Air Expeditionary Force V] to Bahrain in August of 1997. The idea was to create a central, cooperative operations center that could combine the expertise, connectivity, and energy of the different war fighting elements within the wing into a single, rapidly, synergistic deployable center. The goal was to model the EOC after an AOC but also have it tailorable in size to fit any AEW, AEG, or squadron size deployment.¹⁶

Lt Col Craig Campbell, *Technology, Organization and Doctrine Enhancing the Combat Capability of the On-call AEW*

After the deployment in support of AEF V, the EOC was tested in the joint environment during JEFX 1998. These two successes fueled an already great idea even more. The support for the EOC has continued, with Lt Gen Keys, AF/XO, stating that: “[The Air Force] wants to focus on building a deployable integrated Expeditionary Operations Center that can be deployed for base opening actions so our motivated troops do not have to build this capability every time they deploy with ad hoc relationships and piecemeal equipment.”¹⁷ This has led to two wings building full-scale IOCs, the 48 FW and the 7 BW.¹⁸ Both units have conducted deployed operations with an IOC with great success. These beta sites and deployments have produced many lessons learned, and as the IOC concept is hammered out in Air Force doctrine, a few minor vector changes may occur. Current vector appears to incorporate homeland defense type responsibilities within the IOC; however, this is not addressed in this paper.

Limitations

There are a few limitations of the IOC. The first is that the IOC is still a beta concept, and most of the documentation is in draft form. Air Force doctrine is undergoing

many revisions at this time and the IOC is an integral part. However, it still takes time and minor changes can be expected.¹⁹ In addition to doctrine and instructions being in draft form, the actual footprint of the IOC is still in a beta format. This means that the C2 links in and out of the center are not yet completely ironed out. The outcome is that at the time of this paper, there is no final example of doctrine and structure to use as a model. These limitations require that the paper be developed off the current and expected direction and development of the IOC. Additionally, due to the evolutionary nature of the IOC, it has three names which at different times describe the same end state. The terms are EOC, IOC, and ICC. The challenge is that diagrams and briefings, depending on when and who wrote them use the terms to describe different visions. The author uses diagrams to help answer the problem statement. Every effort is made to consistently represent the IOC. This means that at times, diagrams used to describe the IOC may have the term “EOC” or “ICC” as the title.

Need for the Paper

There are numerous documents which provide small pieces of the picture, but none is a single source document. This paper provides a single source for all of the major documents which describe the IOC, as well as a comparison of legacy and future operations centers.

There is also a need to explain the functions of the IOC and how the IOC will “assist” the deployed commander to “integrate” unit level missions into the “joint” fight.

Research Questions

How will the IOC assist the deployed commander to integrate unit level missions into the joint fight? The first secondary question is, How does the IOC assist the deployed commander? To answer this question, it is broken down into capabilities. By looking at the requirements and visions of military leadership, a few key items are consistently desired. The first is expeditionary infrastructure.

In order to support the requirements of today's military missions, organizations must be able to quickly pack up and move. Does the IOC have a truly expeditionary infrastructure? This paper explores the other types of staffs and operations centers the commander has to see if they meet this requirement. This will help formulate an answer for the primary question; will the IOC provide a benefit not currently supported by another organization?

Secondly, this paper looks at whether the IOC effectively standardizes the command and control (C2) nodes. Standardization is a key requirement to modern expeditionary forces. If the IOC effectively standardizes, what benefits does the commander realize? Once again a comparison of the other similar command structures and operations centers is made to see if they provide the same level of standardization. This comparison will be explained in text, but will also be laid out in a direct comparison chart for ease of understanding and interpretation.

In addition, this paper looks at whether the IOC and the other command structures are the same in garrison as when deployed and during combat operations. This leads to a key assumption, organizations will perform better if they routinely operate in garrison as they operate when deployed.

How Does the IOC Integrate the Unit Level Mission?

To answer this question the paper will look at a few key items. The topic of research will be to see if the IOC will produce a doctrinal node for external connectivity. Will the IOC provide standardization which is at a level that any joint unit can easily “connect” to it to share information and data feeds? Once again, the comparison will be: “If the IOC does it, can it do it better than anything else the Air Force currently uses?”

Part of integration is having the correct staffing and skill sets. Integration cannot be achieved if the required skill sets are not available. To answer this question, the paper will look to see how the IOC impacts manning and training requirements. Does it result in a better output with fewer bodies? Does it require a greater investment?

How Does the IOC Enable Improved Joint Fighting?

This question complements the other secondary questions well. By building on assistance and integration, the next logical step is the joint fight. To answer this question, true joint integration will be examined. The previous questions focus more on Air Force to Air Force structure and integration. This question will look at how the Air Force will better integrate with the Army. From this argument, it will be assumed similar results would occur with the other DoD component integration. This will be another assumption listed in the paper.

Doctrinally, the IOC will be examined to see if any improvements in information transfer and sharing occurs. The way this will be assessed is by the number of established external communication nodes. Vertical and horizontal information sharing will be examined to see if there is a potential improvement over existing relationships.

Another supporting question is the impact the IOC will have during air base bed down and opening. Since base opening is most likely a joint effort, the IOC would appear to provide a clear C2 node. This study briefly looks at Bagram Air Base and lessons learned to assess if there would have been a benefit if the IOC had been functional there.

¹ The original thesis idea and statement originated from Col Garrett Harencak, 7th BW Commander.

² Maj Craig P. Campbell, USAF, “Technology, Organization and Doctrine Enhancing the Combat Capability of the On-call AEW” (Research paper, Air Command and Staff College, Air University, Maxwell Air Force Base, AL, 2000).

³ Capt J. Law, USAF, “Mountain Home test ‘plan as you go’ at EFX ’98,” (*ACC News Service* (366th Wing Public Affairs (deployed)); 24 September 1998), 1-2; [article on-line] available from http://www.b1b.wpafb.af.mil/pages/pdf/efx98_plan_as_you_go.pdf#search=Expeditionary%20operations%20center; Internet; accessed on 22 September 2005; and Capt J. Law, USAF, “Gunfighters experiment and exercise expeditionary style,” (*ACC News Service* (366th Wing Public Affairs), 2 September 1999), 1-2; [article on-line] available from http://www.b1b.wpafb.af.mil/pages/pdf/jefx_testing.pdf#search=Expeditionary%20operations%20center; Internet; accessed on 22 September 2005.

⁴ This observation is from the author’s personal experience. Although a published report is not available, the author was part of the unit level “hotwash” meetings and lessons learned discussion.

⁵ HQ USAF, Air Force Operational Tactics, Techniques and Procedures 2-3.1, *USAF Command and Control Nodes* (Washington, DC: HQ USAF, 30 December 2004), 31; available from <https://505ccw.hurlburt.af.mil/505trg/705trs/afottp/AFOTTPLibrary.htm>; Internet; accessed on 27 October 2005.

⁶ Ibid., 27.

⁷ HQ USAF, Air Force Instruction 10-207, *Command Post* (Washington, DC: HQ USAF, 16 May 2003), 22; available from <http://www.e-publishing.af.mil/pubs/majcom.asp?org=AF>; Internet; accessed on 9 November 2005.

⁸ 502 AOS/AOTO, PACAF Instruction 10-207, *Operations PACAF Command Posts* (Hickam AFB, HI: 502 AOS/AOTO, 10 October 2003), 69.

⁹ Rick Folio, AFC2TIG/505 OS, Command and Control for Air Expeditionary Wing Commanders (Briefing, 505 OS, Hurlburt Field, FL, 2005), 2.

¹⁰The IOC was renamed the ICC in January 2006. The term IOC is used in this paper as the baseline term to describe the final vision of the EOC, IOC, and ICC.

¹¹Lt Col Calvin Romrell, USAF, 705th Training squadron/DOC, Air Force Installation Operations Center Enabling Concept (Draft) (Briefing, 705th TRS, Hurlburt Field, FL, 2005), 7, received via electronic mail on 12 August 2005.

¹²HQ USAF, Air Force Doctrine Document 2, *Organization and Employment of Aerospace Power* (Washington, DC: HQ USAF, 17 February 2000), 141; available from <https://www.doctrine.af.mil/Main.asp>; Internet; accessed on 19 September 2005.

¹³HQ USAF, *USAF Command and Control Nodes*, 7, 26.

¹⁴502 AOS/AOTO, 30.

¹⁵Romrell, ii-iii.

¹⁶Campbell, 22.

¹⁷Lt Col Craig Campbell, USAF, 7 BW/XP, Expeditionary Operations Center (EOC) Training at Dyess AFB: “Reducing the Delta” (Briefing, 7 BW, Dyess AFB, TX 2004), 2. Received via electronic mail on 10 August 2005.

¹⁸Folio, 47.

¹⁹Initially Mountain Home termed the first deployment center as an “Expeditionary Operations Center.” The final version of the EOC was not really cemented until the summer of 2005. At that time, some functions within the EOC were renamed. One of these was the survival and recovery center (SRC). It was renamed the Emergency Operations Center (EOC). The Expeditionary Operations Center was renamed the Installation Operations Center (IOC) to reduce confusion. Later in 2006, the IOC was renamed the Installation Control Center. This was changed in the middle of researching and writing this paper. For the purpose of this paper, the term IOC is used to reference EOC, IOC and ICC and has no impact on the conclusions of the paper. Additionally, Chapters 1 and 2 explain the exceptions when the terms EOC, IOC, and ICC are not the same. For Chapter 3 and 4, the illustrations used to answer the questions of this paper sometimes have contradicting titles and names. For the purpose of this paper, the illustrations represent the same operations center, the installation operations center.

CHAPTER 2

LITERATURE REVIEW

Introduction

This chapter reviews the sources used to develop this thesis. The research comes primarily from official documents; doctrine, research papers, development briefings, and news releases. This paper relies on four main sources: governing directives, news releases, research papers, and development briefings. However, one challenge is that no single source truly focuses on explaining the application of the IOC. This section of the work provides an overview of what is available to the reader and the limitations of each source.

Governing Directives

The directives available to help describe the IOC are limited by the fact that the IOC is new. Documents that address the IOC are usually in draft form. The real benefit of these directives is they help provide definitions as well as descriptions of functions, command and control, and organizational layout. AFDD 2 is an excellent starting point. In order to understand why an IOC is needed, the organization of the USAF Air and Space power must be understood. JP 3-30 is also useful. Of the major doctrine publications, JP 3-30 provides the best joint description of the structure of an JAOC. This, together with AFDD 2 helps develop a clear understanding of the current command and control structure. Of the USAF documents, AFOTTP 2-3.1, *USAF Command and Control Nodes*, provides the best summary of the C2 in the USAF and how the different

organizations interrelate. It is an excellent source which provides most of the basic descriptions, locations, and basic relations between the C2 nodes.

Research Papers

There are few research papers on the concept of an EOC or IOC. Although there is a large body of literature about expeditionary operations and expeditionary forces, only two papers were found addressing an EOC/IOC. Lt Col Craig Campbell wrote the first paper in 2000.¹ His focus was primarily on using technology and doctrine to enhance the capability of the AEW. His paper contains some of the best information available on the timeline, evolution, and beginnings of the IOC. This is valuable and necessary to accurately describe why the IOC looks like it does today. Lt Col Campbell provides concrete examples of the use and deployment of the predecessors to the IOC as well as some insights concerning the kind of C2 structure needed to support an AEW commander. His paper makes it clear that the EOC is not just a glorified WOC. Campbell's paper is the only detailed source which provides a vision of what an EOC should be. He addresses an airborne or Enroute Expeditionary Operations Center (EEOC) as well as an EOC. Unfortunately, the EOC concept is only a small portion of his paper.

The second research paper available "Rapid Dominance: Integrating Space into Today's Air Operations Center" is written by Maj Mark Harter.² The paper discusses the integration of space into the Air Operations Center and briefly mentions the EOC concept. The major difference between Maj Harter's paper and Lt Col Campbell's paper is that the EOC is mainly mentioned in a diagram used to explain how integrations should occur. Another distinct difference between the two documents is Harter's paper uses the

term EOC to define an airborne operations center and makes no mention of having a forward-deployed EOC.

Development Briefings

Development briefings comprise another useful resource for defining the IOC. The development briefs are closely tied with doctrine, since most come from the 505 Command and Control Wing (CCW) at Hurlburt field, Florida. The 505th is the office of primary responsibility for the Air Force Operational Tactics, Techniques, and Procedures (AFOTTP) which define USAF C2 nodes.³ The briefings provide some key advantages such as the currency of the information. Briefings are done often to provide updates on a larger project which allows the audience to get the most current information available. Understanding the input of the development briefings is invaluable for this work.

Another key benefit to briefings is that they often provide vignettes and statistics that are useful in explaining where ideas or concepts originated and where they are heading. The briefings examined provide an understanding of the views of senior leadership in relation to the concept. This provides a preview of what a mature project will most likely look like or at least the capabilities it will have.

The 505th CCW briefing by Mr. Rick Folio is a gold mine of information on the IOC.⁴ It provides a brief overview of the EOC concept and what it is intended to accomplish. It also dedicates almost 90 percent of the brief to describe the functional layout of the EOC. The Folio briefing goes into detail on the teams assigned to the EOC and provides a clear picture of how the command post functions, maintenance functions, mission support functions, medical functions, operations functions, commander support

staff, EOC support staff, and EOC director all interact to aid the commander in accomplishing the mission.

The best resources available on the installation operations center are from the IOC Enabling Concept paper and the integrated installation command and control briefing, both authored by Lt Col Cal Romrell of the 705th TRS at Hurlburt field, Florida.⁵ The installation C2 briefing breaks the problem into a few key components. The first is the USAF leadership intent or vision; secondly the briefing addresses the challenges of C2 in today's network centric (netcentric) warfare, the evolution of the IOC, Higher Headquarter (HHQ) tasking, funding, and timeline.

Lt Col Romrell's briefing provides valuable insights into senior military leader's visions. He ties in Gen Jumper, former Chief of Staff of the Air Force (CSAF), Gen Schoomaker, Chief of Staff of the Army (CSA), and Lt Gen Keys, AF/XO, lessons from Operation Enduring Freedom, Operation Iraqi Freedom, as well as agreements made between the Air Force and the Army. The briefing is one which combines concepts into a true joint vision. During Warfighter talks, the Chief of Staff of the Air Force and the Chief of Staff of the Army stated that the USAF will open and operate airfields.⁶ This statement leads to the need for a C2 structure to enable this. This is a logical case for the IOC, which simplifies the C2 problem and improves joint warfighting.

The next portion of the briefing focuses on the evolution of the IOC. However, there are some inconsistencies between this briefing and other sources.⁷ The main difference is the briefing describes the IOC as a combination of the WOC and the EOC. The fact the EOC and IOC are used more or less synonymously throughout most

documents and this briefing differs helps illuminate the challenge the doctrine center is facing in clarifying the C2 for our future war fighting.

Lt Col Romrell's briefing also brings to light additional improvements which will be seen in the near future. The first is the development is that AFI 10-207 will be broken into four volumes to provide the detail necessary to implement and evaluate the new C2 structure of the USAF.⁸ The four volumes cover training, standardization, operations, and C2 personnel management of the IOC. The second major improvement is the scalability and tailorability of the IOC to fit a specific mission requirement.⁹ The final improvement is full electronic integration of the C2 in the components of the IOC. The Air Force Command and Control and Intelligence, Surveillance, and Reconnaissance Center has the lead for this integration. It will ensure information sharing between all of the cells in the IOC.¹⁰

Additionally, Romrell also mentions the additional taskings to support homeland security. The topic of homeland security is outside the scope of this thesis.

The Higher Headquarters (HHQ) tasking, funding, and timeline can all be summarized into a few major points. The IOC was an ACC enabling concept, but has much further reaching impacts. Lt Col Romrell recommends the IOC becomes an USAF enabling concept because of its breadth of capability. He argues that it will allow for true standardization, manning requirements to be supported and managed, as well as formally build it into USAF and joint doctrine. The funding will come from Warfighter Rapid Acquisition Program funds (WRAP) and sustainment funding which are approved through fiscal year 2006. The end of fiscal year 2006 is also the same time when the IOC Tactics, Training, and Procedures are to be complete.¹¹

The final product from briefing sources is Lt Col Romrell's IOC enabling concept paper. It provides information on the need for the IOC, the challenges of the IOC, purpose and intent of the IOC. It also is the only document which provides a clear picture of the command and control and staff relationships of the AOC, ACC, A-staff, and the IOC. (see figure 6).

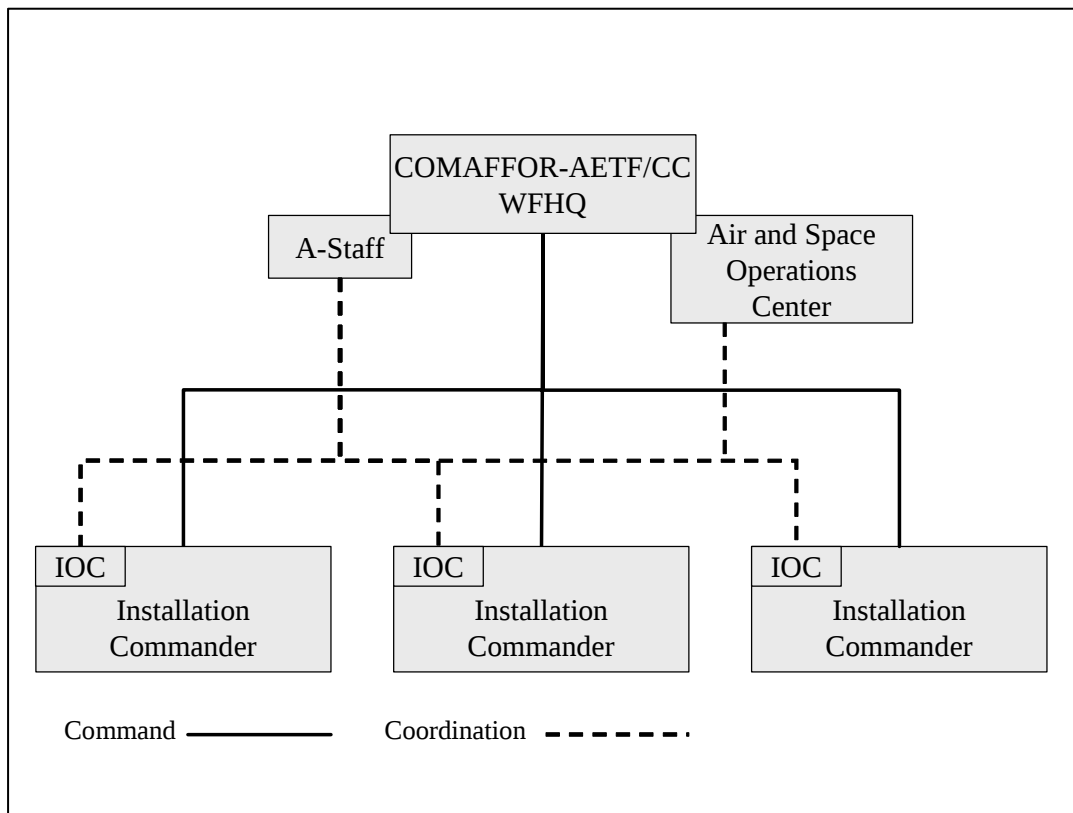


Figure 6. Command and Staff Relationships between AOC and IOC
 Source: Lt Col Romrell, Installation Operations Center Enabling Concept (Document, Hurlburt Field, FL: 705th Training Squadron, 2005), 7.

News Releases

The last major source of information on the IOC comes from new releases. News releases provide information on timelines, updates, testing, employment, and units which

have used the IOC. This work used the news releases primarily to help construct a timeline for the evolution of the IOC. This makes it much easier to frame the problem. The releases help show the support for the IOC. In other words, it is not just an idea which was short lived. The beginnings of the IOC idea in the late 1990s and consistent reports on the use of it though 2005 show that it is not only here to stay, but has also withstood the test of time.

¹Maj Craig P. Campbell, USAF, “Technology, Organization and Doctrine Enhancing the Combat Capability of the On-call AEW” (Research paper, Air Command and Staff College, Air University, Maxwell Air Force Base, AL. 2000).

²Maj Mark E. Harter, USAF, “Rapid Dominance: Integrating Space into Today’s Air Operations Center” (Research paper, Air Command and Staff College, Air University, Maxwell Air Force Base, AL, 2000), 15, 32, 39, 41-43, 50; [document on-line] available from http://www.au.af.mil/au/aupress/Wright_Flyers/Text/wf11.pdf; Internet; accessed on 26 October 2005.

³HQ USAF, Air Force Operational Tactics, Techniques and Procedures 2-3.1, *USAF Command and Control Nodes* (Washington, DC: HQ USAF, 30 December 2004), i; [document on-line] available from <https://505ccw.hurlburt.af.mil/505trg/705trs/afottp/AFOTTPLibrary.htm>; Internet; accessed on 27 October 2005.

⁴Rick Folio, AFC2TIG/505 OS, Command and Control for Air Expeditionary Wing Commanders (Briefing, 505 OS, Hurlburt Field, FL, 2005).

⁵Lt Col Calvin Romrell, USAF, 705th Training squadron/DOC, Air Force Installation Operations Center Enabling Concept (Draft) (Briefing, 705th TRS, Hurlburt Field, FL, 2005), 18 (Received via electronic mail on 12 August 2005) and Lt Col Calvin Romrell, USAF, 705 TRS/DOC, Integrated Installation Command and Control, (Briefing, 705th TRS, Hurlburt Field, FL, 23 August 2005) (Received via electronic mail on 12 August 2005).

⁶Romrell, Integrated Installation Command and Control, 3.

⁷This briefing is the most current document up to the time of its publishing and is part of a focused effort to standardize the operations centers at the wing level.

⁸Due to confusion, the IOC (now the ICC) is explained in four AFIs, AFI 10-207, and three volumes in AFI 13-1. This is mentioned in a briefing by Col Pat Hoffman, 505 TRG/CC, Installation Control Center (505th Command and Control Wing, Hurlburt

Field, FL, 6 January 2006), 14. As well as in a message from Benjamin Brewer. Received via electronic mail, 16 September 2005, CMSgt Benjamin Brewer Jr., USAF, AF/XOOO, USAF pentagon.

⁹Romrell, Integrated Installation Command and Control, 12.

¹⁰Air Force C2 & ISR Center, Installation Control Center (ICC) (Briefing, C2 & ISR Center, Langley AFB, VA, 22 January 2006), 2, 12.

¹¹Romrell, Integrated Installation Command and Control, 6, 10, 16.

CHAPTER 3

RESEARCH METHODOLOGY: DEFINING WHAT THE DEPLOYED COMMANDER NEEDS

Introduction

This chapter focuses on how to realize the benefit the installation operation center may or may not provide. The only way to accomplish this is to establish a set of criteria to measure the impact on the IOC. This is done by pulling out the visions, requirements, and challenges which are laid out by senior leadership as well as by doctrine. To do this, the primary question was broken down into its three secondary questions. First, what constitutes assisting the deployed commander? Second, what does the IOC require to integrate the unit level mission, and finally, what functions of the IOC make it a joint fighting enabler? Each of these will be researched to determine what criterion adequately analyzes the capabilities the IOC brings to the deployed commander.

How Does the IOC Assist the Deployed Commander?

This section researches the following characteristics, which would be beneficial to a deployed commander. Does the IOC: (1) have an Expeditionary Infrastructure, (2) have a standardize command and control node, (3) provide a total complement of functionality (C2, planning, support, etc.), (4) allow Air base defense integration while continuing the mission, and (5) have similar combat and in garrison practices and structure?

These are the most commonly briefed requirements throughout lessons learned and the documents referenced throughout this paper. These critiques come from deployed commander after action reports and interviews.¹

Expeditionary Infrastructure

The first aspect to review is whether the IOC provides any benefits to the expeditionary nature of today's military. The origins of the IOC evolved from the need to support an Air Expeditionary Wing deployment. Mountain Home Air Force Base, Idaho and the planners there, knew they did not have a process in place to support the quick and mobile response required to support their taskings. To remedy the situation, they developed two separate concepts. The idea was to provide a seamless transition from garrison to forward operating location (FOL). Mountain Home, home of the "Gunfighters," developed an airborne operations center and a deployed operations center to provide the uninterrupted capability. A palletized portion of the Expeditionary Operations Center was loaded on a KC-135 to provide enroute capabilities to plan and control. The flying EOC was coined, the Enroute Expeditionary Operations Center. Once on the ground, the operations center crew and pallet unloaded to become part of the forward operating location Expeditionary Operation Center.²

The other reason why expeditionary infrastructure is a good tool to determine the benefits to the commander is that it was directed by the senior leaders of the USAF. Not only has the USAF leadership demanded 24-hour seven day a week capabilities, they also expect a unit to deploy and be able to redeploy at a moments notice to a new FOL while in theater.

The measurement used to define expeditionary is based upon the definition of the Aerospace Expeditionary Force (AEF) definition from Air Force Doctrine Document 2, February 2000. Summarized it requires a force (for the purposes of this paper an

operations center) to be rapid, responsive, and tailorable. If the IOC's infrastructure meets these criteria, then the infrastructure will be considered expeditionary.

Standardized Command and Control Node

Standardization of the C2 node appears to be another logical measure to determine the assistance an IOC can provide the commander. Numerous military journals have addressed the issue of command and control and dealing with its complexity. Terms, such as network centric or netcentric and information age, cover the pages of these magazines. AFOTTP 2-3.1 states that "C2 relationships and systems must be able to support worldwide, distributed operations; integrate all aspects of air and space power; and provide for connectivity with joint and coalition operations...The Air Force, whether through permanent facilities or expeditionary capability, must provide a permanent and flexible network of C2 nodes and a deployment capability that can bring global capabilities into theater focus."³ From this it would then make sense to assume a C2 node must be standardized to provide the deployed commander flexibility to meet the requirements laid out in USAF doctrine. As General (ret) Fogleman notes:

I will tell you that a commander without the proper C2 assets commands nothing except a desk. You must have the ability to communicate with the forces under your command. You must have the ability to exchange information with them freely, frequently, and on a global basis. It's one thing to have highly technical, sophisticated observation platforms, but if you can't use the information in a timely manner, it's wasted.⁴

In order for the deployed commander to command, he must have access to decision making or actionable information. He must also have the ability to rapidly distribute his orders and intent throughout his installation. According to General Fogleman's quote, a solid C2 structure is necessary to accomplish this.

Total Complement Functionality (C2, Planning, Support, Etcetera)

Previous chapters discussed briefly what various operations centers provided to the commander. Some such as the WOC provided more of an in garrison reporting center with crisis action capability. While operations centers like the AOC provided a planning and execution function used by the ACC to plan and employ combat air.

A deployed commander can be viewed as a dual-hatted commander. Similar to the COMAFFOR who is usually dual-hatted as the JFACC. Although this is greatly simplified and there are many more reasons for the division of duties at the JFACC level, it provides a good comparison. In garrison, the commander deals with peace time operations, which in general are paced more slowly than combat operations. During peace operations, the base commander does not normally have a daily planning staff. Additionally, although the base has the same objectives and goals, they are not necessarily all focused at the same period of time. In other words, the immediate priority is not always the next line on the Air Tasking Order (ATO). Most USAF bases are structured in this manner.

Deployed commanders have the same responsibilities with the addition of combat operations. In order to enable the commander to be as effective as possible, it would make sense to provide him with a similar tool to that of the JFACC/COMAFFOR. The COMAFFOR has an A-Staff and the JFACC has the AOC. This combination has proven very effective over the last few conflicts. From this reasoning it is clear to see that a deployed commander with an operations center which provided his C2, warfighting, and support functions all in one would make him much more effective.

Air Base Defense Integration While Continuing the Mission

This criterion is actually a combination of capabilities. In simplest of terms a base needs protection from ground and air threats. Traditionally the term air base defense has brought to mind thoughts of attacks from incoming projectiles whether it was from an airplane, missile, mortar, etc. The commander needs to also be concerned with attacks from around the base. These attacks could come from snipers, suicide bombers, etcetera. To make the challenge even greater, different agencies, to include joint and multinational may be responsible for different areas of the base defense plan.

To continue to support the ACC and the tasked missions, the deployed commander must be able to manage a threat response while continuing to support the mission. His ability will be impacted to some extent by any attack or interruption, but the severity and length of the impact would logically be less with a fused threat response team.

The ability to reduce a threat by having fused information and to minimize the impact of an attack definitely benefits any commander.

Similar Combat and in Garrison Practices and Structure

A common phrase used in the military is “train like you fight.” Failure to do this is also one of the largest complaints military members voice in after action reports. Unfortunately, the deployed commander may or may not be immediately familiar with his deployed team. With the modularity of the AEF, an AEW can be composed of persons from active duty AF, the reserves, or the guard. This makes it vital that those deployed to support the commander have similar practices at home as when they are deployed. Even if the AEW consisted of all active duty personnel, the units and personnel

are not necessarily organic to the commander's home unit. The U.S. Air Force functions as a team and needs a standard in garrison practice to ensure seamless integration during deployed operations. This will reduce the many challenges the commander faces. Not only has he gained a combat mission, he is also working in an unfamiliar location, and he does not have his usual team. How can this be mitigated? One way is to standardize the command and control structure across the USAF for deployed units and in garrison operations. Although not all functions are required for peace or combat operations, functions and training standardization could be laid out to make both operations as similar as possible. This standardization also provides the deployed commander additional benefits in the fact that his deployed team is already trained to work in his deployed operations center. The transition from the in garrison to the deployed center should be nearly seamless. This also would logically benefit the deployed commander. It reduces time to set up operations which allows the mission to be focused on and executed much more quickly.

How Does the IOC Integrate the Unit Level Mission?

The next secondary question concerns the value of the IOC in the integration of the unit mission. There are four criteria used to evaluate this question: Does the IOC provide a doctrinal node for external connectivity (a C2 node in doctrine provides a standard for use in the USAF as well as joint environment)? Does the IOC provide flexibility in manning? Are fewer assets required? Is the same mission accomplished in less time?

Does the IOC Provide a Doctrinal Node for External Connectivity?

An organization can have the best solution since the invention of the wheel, but if the outside world does not know it exists or how to access it, it is of little use to anyone. This is why it is important that an operations center be formalized in both service and joint doctrine. If a unit mission is to be truly integrated with outside agencies, a few things must be known. First, is that it exists, second, how to access it. By establishing an operations center that is explained in doctrine, planners inside and outside know where to go for information and tasking. The easiest analogy is a business and a phone book. If the customers have the phone book, they can look up the business and find the phone number and address to contact the business. For this reason, a doctrinal node (an address in a phone book) will likely improve unit integration.

Are Fewer Assets Required?

The next question used to determine the effect the IOC has on unit level mission integration is the effect on assets. This is difficult to measure for two reasons. The first is a comparison is required and the second is the IOC is tailorable. The Wing Operations Center is used as a comparison standard to aid in measuring the asset requirements of the IOC. The tailorable nature of the IOC will be addressed by looking at the minimum and maximum requirements.

The two main components used to determine the asset requirements of an operations center will be footprint and personnel requirements. Footprint will be the actual structure size and layout requirements. In simple terms it is the square footage required to support the functions of the IOC. The next measurement is personnel; which is an easily quantifiable number. For this paper and simplicity, general observations will

be used based upon functions and cells within the IOC. More cells require more people, fewer cells require fewer people.

Is the Same Mission Accomplished in Less Time?

One of the popular phrases in today's military jargon is "shortening the kill chain." As indicated by the statement, there are numerous events or links in any kill chain. Therefore, if any of the links is made more efficient and all other links remained constant, the kill chain would be "shortened." With this in mind, if a unit completed its mission in less time it would have a positive impact on the kill chain. This is another key item to determine if the IOC is an improvement or not.

This is a difficult variable to quantify. With this known, the assumption is that improved access to timely and applicable information means more can be accomplished in less time.

Does It Improve Information Collection, Analysis, and Distribution?

Another important aspect of integration is collection, analysis, and distribution. This is a very simple concept and can be explained through two examples. If an organization were closed off from any information, or if the information flowing in or out was impeded, the organization would not be as effective. In such a case, timely decision making would be difficult, and by the time information was available, it may no longer be of use. This is well understood in doctrine and is the basis for Commander's Critical Information Requirements (CCIR).

The measure used to compare the IOC to this standard will overlap some of the other criteria used earlier. The primary focus will be on whether the IOC has the ability to

do more than pass data up the chain to the AOC. Ideally, if the IOC were truly to improve integration, it would need to do a few things. One is take post mission data and provide some analysis. Simply recording and passing the information to the AOC provides a benefit, but analysis by the weapon systems experts actually provides useful information, not just data. This does not need to occur immediately. In other words, the normal report could still go to the AOC, but supplemental information could be added later. Another issue is the flow of information into the IOC. Access to information from other sources and assets in theater would also greatly improve the ability of an operations center to integrate. Since the weapons systems experts work in the IOC and are planning the tactical plan, they have the expertise and often the time to get into the details and sift through additional information. This would allow for improved unit employment and integration.

How Does the IOC Enable Improved Joint Warfighting?

The third and final secondary question used to answer the thesis question is whether the IOC is an enabler in the joint fight. If it is, how does it improve the joint warfighting capabilities? The characteristics used to help evaluate this question are difficult to quantify, so with this in mind, some conclusions will be developed from the most likely outcome or by using comparative examples. In other words, if similar organizations have implemented the ideas, the outcomes can be examined in relation to the IOC. The key variables used to evaluate the IOC's capability are whether it has a standard C2 node for joint integration; does it allow better transfer of information both vertically and horizontally; does it provide a clear C2 for Air Base bed down and opening; and does it ultimately shorten the kill chain?

Does the IOC Provide Standard C2 Node for Joint Integration

The model used to measure joint integration is based on lessons from the early 1990's through the current day. It also takes into account what the visions of the current service and joint chiefs. The past fifteen years has demonstrated that joint, by default, normally means standardized. Although not an absolute (use the Joint Strike Fighter variants as an example), jointness brings about more commonalities. The criterion of a standard C2 node for joint integration is very similar to the criteria used to measure unit integration. There is much overlap so, in addition to the criteria listed before, this criteria looks at having not only a "phone number," but also at having phones which can talk to each other. Software can be the same as hardware. In order for an operations center to integrate in the joint environment, it needs similar physical and virtual connections. In other words, it needs to be able to talk to purple forces. If an operations center has this capability, it will be considered capable of joint integration in the cyber world.

Sharing of Information (Horizontal and Vertical)

The sharing of information in all directions, vertically and horizontally, is vital to full integration in the joint environment. This means there may be links which are required that go to other branches besides USAF agencies. An example would be connectivity with the battalion (similar to an USAF squadron) the Air Force unit is supporting with that day's Air Tasking Order assignment. It is important to note that this is also very similar to the analysis, collection, and distribution criterion mentioned earlier. The difference is that this looks at communications with not only USAF forces, but also with other Department of Defense (DoD) agencies.

Another assumption made is horizontal information sharing will not impede or disrupt the proper flow of information or formal command and control relationships.

Clear C2 for Air Base Bed Down and Opening

The inadequacy of the USAF legacy unit C2 centers to support current and future operations has been the topic of much discussion at all levels in the Air Force and Army.

Lt Gen Keys, AF/XO stated he

wants to focus on building a deployable integrated Expeditionary Operations Center that can be deployed for base opening actions so our motivated troops do not have to build this capability every time they deploy with ad hoc relationships and piecemeal equipment.⁵

Currently there is a gap in the ability to bed down and open an air base. “The Contingency Response Groups (CRG) have the mission for base opening. However, they are not equipped to provide a robust C2 capability to the gaining installation commander.”⁶ To improve the deployed commander’s ability to command and control air base bed down and opening, it will need to be integrated into USAF and joint doctrine. By defining the process in doctrine, the roles and requirement will be clear and will eliminate the current shortfalls in this process.

Impact on the Kill Chain

At the end of the day, the end outcome from a military operation is having an efficient kill chain. This does not necessarily need to be kinetic or be tied to a specific phase in an operation. However, for the purpose of this paper, the impact on the kill chain will be looked at from primarily the kinetic (bombs on targets) perspective.

The desire of a joint military force is to improve its ability to win a conflict and today’s military faces new challenges. Technology has significantly improved US

capability, but has also significantly enabled our adversaries. One of the main challenges technology has presented is the ability to significantly compress time and events. This has been done by near instant messaging through voice, video, text, etcetera. Because of this, information needs to be received and acted on in a timely fashion or opportunities may be lost. If an operations center provides better reception of information and is able to act on that information more quickly, it improves the kill chain. This is done by shortening either the information of an event to the aircraft, placement of the aircraft in the needed location, or by shortening the decision making timeline for approval. If any of these actions are achieved, it will be considered advantageous to the joint fight.

¹Col Pat Hoffman, 505 TRG/CC, Installation Control Center (505th Command and Control Wing, Hurlburt Field, FL, 6 January 2006), 4, 17.

²Maj Craig P. Campbell, USAF, “Technology, Organization and Doctrine Enhancing the Combat Capability of the On-call AEW” (Research paper, Air Command and Staff College, Air University, Maxwell Air Force Base, AL, 2000).

³HQ USAF, Air Force Operational Tactics, Techniques and Procedures 2-3.1, *USAF Command and Control Nodes* (Washington, DC: HQ USAF, 30 December 2004), 1, [document on-line]; available from <https://505ccw.hurlburt.af.mil/505trg/705trs/afottp/AFOTTPLibrary.htm>; Internet; accessed on 27 October 2005.

⁴*Ibid.*, ii.

⁵Hoffman, 4, 17.

⁶*Ibid.*, 5, 17.

CHAPTER 4

ANALYSIS

Introduction

This chapter analyzes the Installation Operations Center against the criteria and methodology covered in chapter 3. The analysis should answer the following question. How will the IOC assist the deployed commander to integrate the unit level mission into the joint fight? Similar to earlier chapters, the primary question will be broken down into three secondary questions: (1) does the IOC assist the deployed commander, (2) does the IOC integrate the unit level mission, and (3) does the IOC enable improved joint warfighting?

This chapter uses diagrams for comparison. The Wing Operations Center is used as the existing operations center standard. That standard is the baseline for IOC impact comparison. Due to the evolution of the IOC, the terms do not always indicate current structure. However, for discussion purposes, the diagrams indicate the intent and current direction the IOC project is heading. A simple example of this are the terms Expeditionary Operation Center, Installation Operation Center, and Installation Control Center have all been use to indicate the same operation center at one time. This becomes confusing, because the first Expeditionary Operations Center does not look like the current Installation Operations Center.

Does the IOC Assist the Deployed Commander?

This section examines the IOC to determine if it does assist the deployed commander. Definitions from chapter 3 are used to assess if the IOC provides the

following: (1) an expeditionary infrastructure, (2) a standardized command and control node, (3) a total complement functionality (C2, planning, support, etcetera), (4) air base defense integration while continuing the mission, and (5) similar combat and in garrison practices and structure.

Expeditionary Infrastructure

It is difficult to find a definition for “expeditionary” in Air Force doctrine. The best method to define expeditionary is accomplished by interpreting the intent of an Aerospace Expeditionary Force (AEF). Air Force Doctrine Document 2 (AFDD 2) states that an “Aerospace expeditionary force [is] an organizational structure composed of force packages of capabilities that provides warfighting CINCs with rapid and responsive aerospace power. These force packages are tailored to meet specific needs across the spectrum of response options...”¹ The vital characteristics of an AEF are rapid, responsive, and tailored to meet specific needs across the spectrum of response options.²

The Installation Operations Center is definitely rapid in comparison to the Wing Operations Center (WOC). There are two reasons this is true. The design of the IOC supports operations in garrison and while deployed. The WOC is by definition a fixed operations center which does not facilitate rapid deployability. Additionally, the practices used by the IOC in garrison are similar to those during deployed operations. The WOC is not designed for deployed operations and does not have the deployed practices of an IOC.

The Installation Operations Center is also a very responsive and tailorable operations center in comparison to the Wing Operations Center. The IOC is responsive because it has all of the capabilities a commander needs to conduct peacetime or combat operations. The structure of the IOC supports any range of tasks from higher

headquarters without the need to stand up an ad hoc center or cell. Additionally, the IOC is tailorable. This gives the IOC the ability to deploy or exercise only the functions needed to accomplish the assigned task. This can greatly reduce the footprint and requirements to support a mission.

The Installation Operations Center definitely has an expeditionary infrastructure. The structure of the IOC provides a vast improvement over the WOC and supports the ability of the commander to provide rapid, responsive and tailorable capabilities across the spectrum.

Standardized Command and Control Node

The Installation Operations Center does provide the commander with a standard command and control node. The IOC accomplishes this by improving the data sharing and by cementing the concept and description of the IOC in Air Force Doctrine.

The easiest way to see that the IOC has improved the commander's connectivity is by looking at the data sharing made possible by the IOC. Figure 7 shows a comparison of the Wing Operations Center to the Installation Operations Center. The comparison makes a few assumptions. First, it is assumed the WOC had data sharing between all of the functions checked in green. Second, it is assumed the sharing of data and connectivity is synonymous.

Connectivity Comparison

Figure 7. Connectivity Comparison of WOC and ICC
Source: Air Force C2 & ISR Center, Installation Control Center (Briefing, Langley Air Force Base, VA: C2&ISR Center, 8 Dec 2005), 12 and author's additions.

42

reports were often developed by cutting and pasting. The IOC should help reduce the need for this through full integration of the center.

Total Complement Functionality (C2, Planning, Support, Etcetera)

The importance of having a functional and numbered staff was mentioned in chapter 2. Figures 8 and 9 show a general comparison of the WOC and the IOC. At times, the commander may not need all of the functions of the IOC. In that case, an IOC may provide the same capabilities which a WOC does. The tremendous advantage of the IOC structure is apparent during times of intense operations. Examples are emergency response on the installation and wartime operations. With the IOC, the commander does not need to wait until the battle staff is together to get priority information. That information is already fed to the IOC. All functional areas of the installation are represented in the IOC, which provides a central area for gathering and disseminating critical information.

The IOC provides the commander with a support and execution capability. Although it is not structured into a numbered staff and divisions like the Commander Air Force Forces and Joint Forces Air Component Commander has, it provides a very similar capability to the deployed commander. The Installation Operations Center is a combination staff. In other words duties are combined such as intelligence, plans and operations. On an Air Force A-staff, these functions would be separate. The A-2 would be the intelligence division, the A-3 operations, and the A-5 plans. The IOC combines these into a single team, the operations team. Due to the size and scope of the mission tasked to an Air Expeditionary Wing or an Air Expeditionary Group a combined staff provides the best balance of resources to requirement. Having individual Intelligence,

Operations, and Plans teams would significantly increase the size and requirements of the IOC.

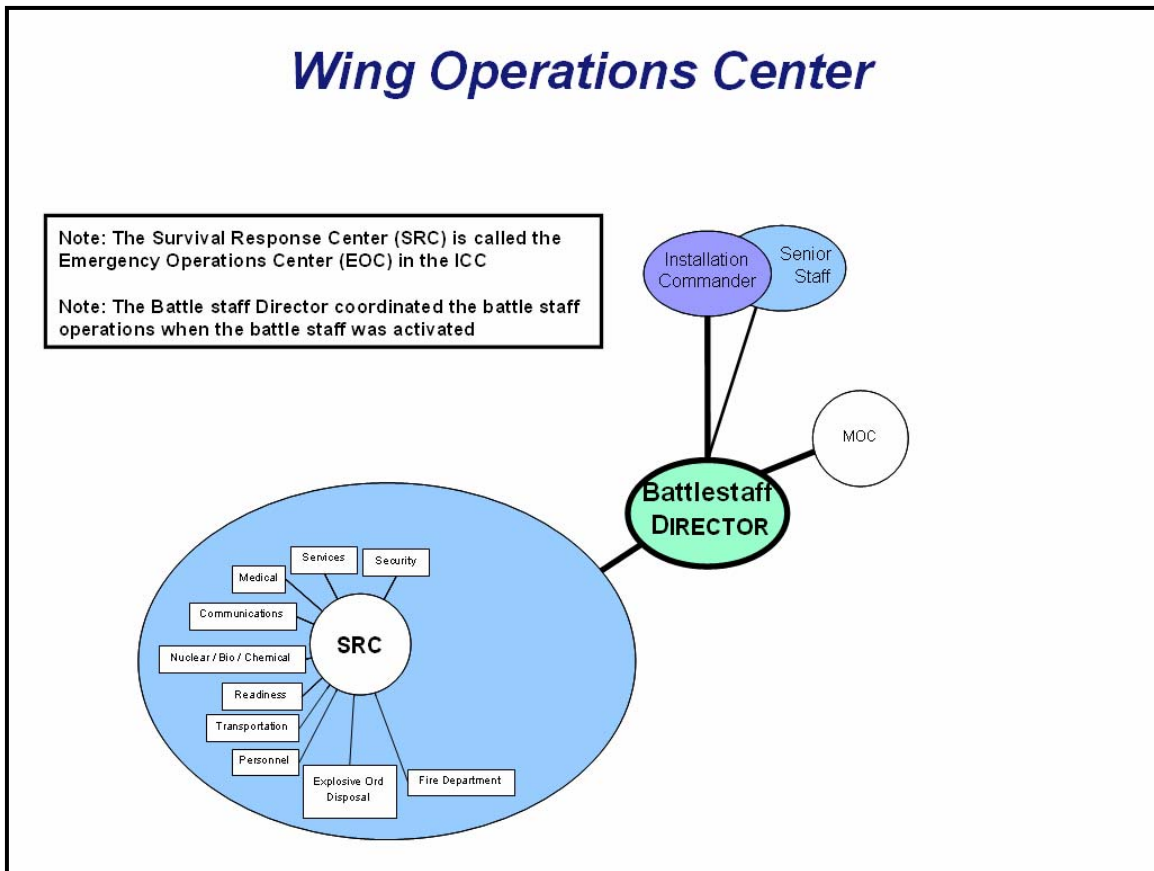


Figure 8. Functions of a Wing Operations Center
Source: Air Force C2 & ISR Center, Installation Control Center (Briefing, Langley Air Force Base, VA: C2&ISR Center, 8 Dec 2005), 6 and author's additions.

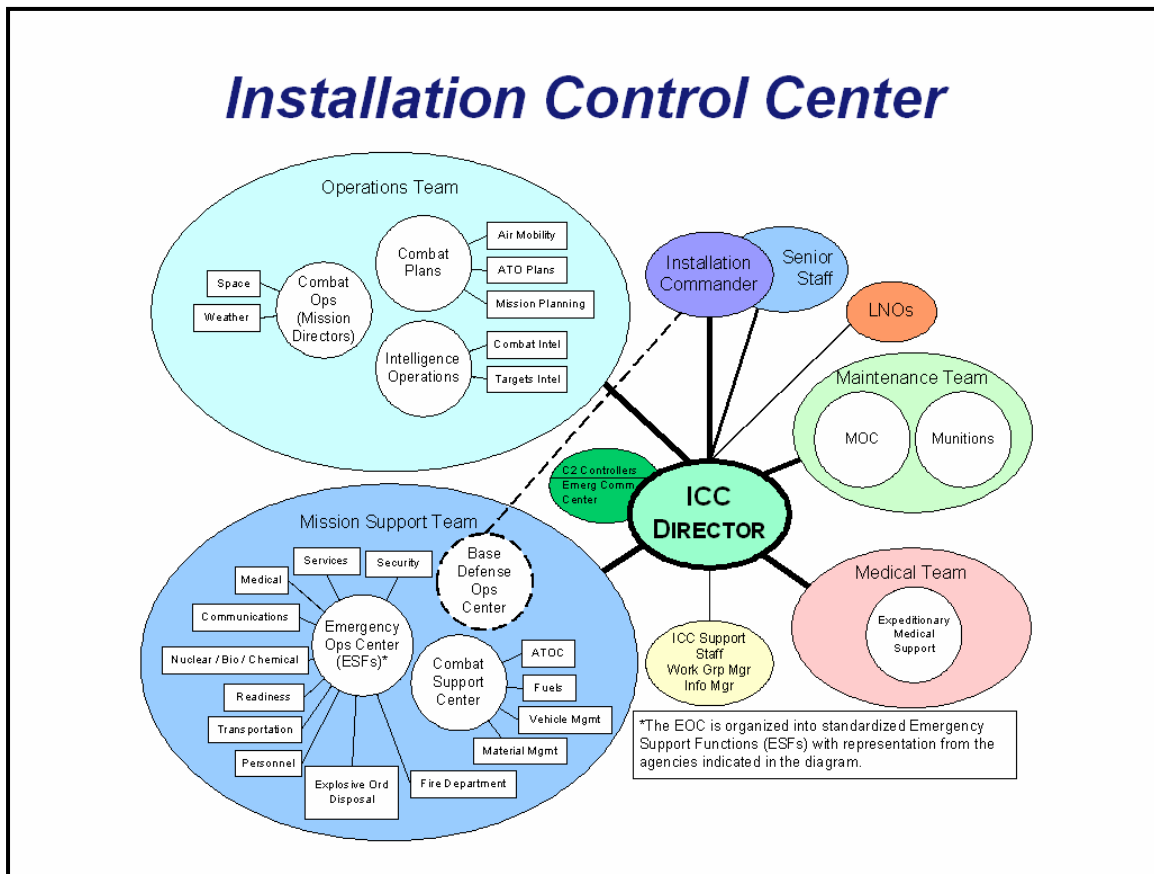


Figure 9. Functions of an Installation Operations Center
Source: Air Force C2 & ISR Center, Installation Control Center (Briefing, Langley Air Force Base, VA: C2&ISR Center, 8 Dec 2005), 6 and author's additions.

The IOC does provide the commander with a full complement of functionality. The A-1 (manpower and personnel), A-4 (logistics), and A-6 (communications and information) are combined into the Mission Support Team. The IOC also combines a Space Support Cell in with the combined Operations Team mentioned earlier. This with the addition of Liaison Officers (LNOs) helps the IOC mirror functions with the AOC. The deployed commander has all functionalities in a single location and has dedicated positions to coordinate with outside agencies. An example of this is the LNOs as well as the Space Cell.

The IOC does provide the commander with a total complement of functionalities. This is an important building block used to determine the IOCs impact on the commander's ability to carry out his mission. This assumption will be used later in this chapter to answer secondary and tertiary questions.

Air Base Defense Integration While Continuing the Mission

An air base can be threatened by nearly any medium. Because of this, air base defense requires seamless joint integration to provide the best force protection. The 505th Command and Control Wing has identified this as a C2 challenge. In a recent briefing it was stated that "Integrated Expeditionary Base Defense in most expeditionary situations must be coordinated with other services. The processes must be well defined and exercised."³ This indicates the IOC will be the first operations center at the unit level with the capability to provide the transparency required to allow the commander to quickly analyze an attack, react to the problem while continuing the mission. Additionally, purple and internal integration will greatly enhance the commander's ability to anticipate and mitigate threats to the base and mission. Figure 10 provides an example of some of the many nodes which provide the integration necessary to mitigate threats to the air base and personnel. It also provides an excellent example of how the IOC will be a joint enabler.

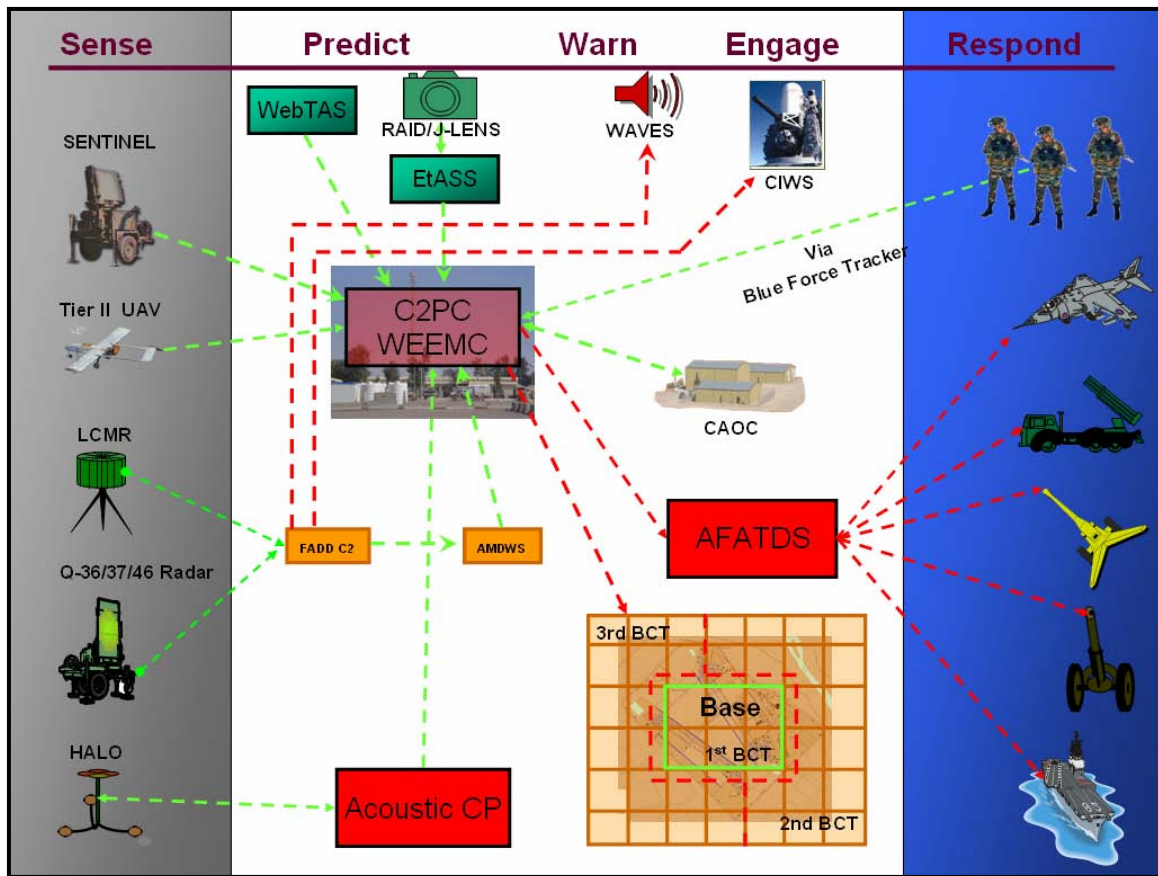


Figure 10. Air Base Defense Integration (Plug-in C2 Capability)
Source: Air Force C2 & ISR Center, Installation Control Center (Briefing, Langley Air Force Base, VA: C2&ISR Center, 8 Dec 2005), 11.

Similar Combat and in Garrison Practices and Structure

One of the challenges most every military has faced is the ability to practice in peacetime in a manner similar to what is expected in combat. The Installation Operations Center attempts to reduce the difference between in garrison and deployed operations. Both practices and structures are explored to determine if in theory the IOC will accomplish this.

The IOC structure and practices are defined in four volumes. The first, Air Force Instruction 10-207 Installation Command Center (Previously Installation Operations

Center), provides the basic description of the operations center. The Wing Operations Center had a similar instruction. The IOC project adds three new volumes of instruction, the 13-1 Installation Command Center series. These three volumes cover the training, inspection and evaluation, and operations of the IOC. This is the criteria used so the Inspector General (IG) can grade the performance of the IOC against a known standard. This is instrumental to standardizing the IOC in peacetime as well as deployed operations. It also makes the practices in garrison the same regardless of the unit running the IOC. This will be apparent when deployed positions are filled by non host unit personnel. The assigned personnel will fall in with minimal need for spin up since the operations will be the same as what they use at their home station.⁴

The last component for deployed and in garrison comparison is the structure of the IOC. The structure in this context is the functions the operations center contains. The footprint and physical structure will most likely vary depending on environment and resources. The functions of the IOC will not change. What should happen is the IOC will be tailored to fit the mission requirements. This has potential up and down sides. Since the operations cell and medical cell are not used on a daily basis in garrison those functions will probably only be used during exercise or during emergency responses. The practices are the same, but executing a fully stood up IOC may only occur a few times throughout the year during exercises. During deployed operations, the IOC will probably have all functions stood up. Because the IOC is tailorable and will have all functions inspected it will theoretically operate similar in garrison as it will deployed. The limiting factor is how often the IOC operates and trains at its maximum capacity.

The overall analysis of the IOC operations in garrison versus operations deployed is that they are similar. This is primarily driven by the introduction of the AFI 13-1 volumes for training, standardization and evaluation, and operations.

How Does the IOC Integrate the Unit Level Mission?

This secondary question is examined in this section to determine how the IOC may provide the following improvements. Does the IOC provide a doctrinal node for external connectivity, are fewer assets required to accomplish a mission, is the same mission accomplished in less time, and does the IOC improve information collection, analysis, and distribution.

Does the IOC Provide a Doctrinal Node for External Connectivity?

As discussed in chapter 2, this question addresses having a “phone number,” so that planners inside and outside the operations center can easily look up another operations center. This can be for telephonic communication, instant messaging, data sharing, etcetera.

The IOC provides this by cementing the concept in doctrine. Unlike the Wing Operations Center, the IOC will be standardized throughout Air Force doctrine. When the drafts are complete, the IOC will be describe in Air Force Instruction 10-207 and the training, standardization and evaluation, and operations will be in three Air Force Instruction 13-1 volumes. This will standardize all IOCs allowing them to be fully integrated not only internally but to external IOCs, the Air and Space Operations Center, and other USAF organizations.

The efforts to standardize across the USAF have also led to the Command and Control Center and Intelligence, Surveillance, and Reconnaissance Center becoming involved in the project. The result has been standardized data sharing within the IOC functions. A secondary effect of this is the ability to share data between outside IOCs. The internal data sharing created a node for external sharing of information. This in turn is explained and graded through Air Force doctrine.

Are Fewer Assets Required?

The criteria for determining if the IOC required fewer assets than the WOC were physical footprint, equipment, personnel, and support. On the surface, it appears that the IOC significantly increases the footprint required to support the unit level mission. It takes the basic WOC functions and adds eight additional basic functions. Some which have numerous teams within the function. The ICC adds Liaison Officers (LNOs), a maintenance team, a medical team, an operations team, a base defense operations center, a combat support center, an IOC support function, and a command and control team. Each additional team requires work space and therefore increases the required footprint of the IOC. The teams also require additional equipment and often specialized equipment and capabilities. An example of this is access to Joint Worldwide Intelligence Communication System (JWICS).

The other cost of the IOC is personnel. To man all the functions requires significantly more personnel. Although the IOC is tailorable and can easily scale down unnecessary functions. For example, operations could be at minimum manning or nonexistent at a base without assigned or attached air assets. Although the bodies will likely come from lower echelon units, the end result in the operations center is more

manning and requirements. The benefit of having equipment and personnel expertise centralized is not considered in this analysis as it is addressed later.

Ultimately the IOC does require more assets than previous operations centers such as the WOC. Although a majority of the personnel and equipment will come from the units supporting the functions in the IOC, there will be overlap or duplication which occurs.

Is the Same Mission Accomplished in Less Time?

The difficulty in quantifier this questions was mentioned in chapter 2. In combat operations with a fully operable Installation Operations Center, the mission should be accomplished in less time. The biggest advantage will be seen as missions become more complex. The reason for this is the functions are centralized and the information is shared throughout the IOC.

The easiest way to assess this is through a scenario. If an aircraft was returning from a combat sortie and needed to divert to another airfield due to an engine problem what actions would need to be accomplished? As a minimum the following are affected: the crew on the aircraft is no longer available to fly or plan, an aircraft is not available, a maintenance team needs to be sent to repair the aircraft, parts need to be sent to repair the aircraft, and the AOC will need to know the location of the aircraft for accountability. In a Wing Operations Center the maintenance operations center would be able to disseminate basic information to maintenance, but everything else would be accomplished by individual commanders working in parallel to get personnel and resources to repair the airplane and to adjust the schedule to make up for the loss of an airplane and crew out of the daily line up.

The IOC will reduce duplication of effort and will expedite the entire process. Because the IOC has a common operating picture all functions will have access to the information at the same time. If a jet diverts, it will trigger a notification chain as well as a group of actions. The IOC director will coordinate (for the commander) the functions within the IOC. The structure of the IOC allows the director to immediately access maintenance, support, and operations. These are the major functions impacted by a diverting jet. As information becomes available, all functions in the IOC will see the updates and be able to adjust to support recovering the aircraft. In a WOC this information easily becomes stove piped. The information may be passed, but it is done from individual to individual in series. The IOC in contrast provides the information sharing in parallel, what one function knows, all functions know. Because of this the IOC will greatly decrease the amount of time required to complete the same mission. It does this by reducing the amount of duplicated effort and it also reduces the overall time to accomplish the mission. This is because of the synergistic effect of a common operating picture, centralized functions, and a full time coordinator.

Does it Improve Information Collection, Analysis, and Distribution?

In the past, deployed wings used a mission planning cell which may or may not be located or a part of the Wing Operations Center. For this very reason, the IOC has a clear advantage. It combines the functions into a single operations center. As mentioned earlier, the standardization, data sharing, and centralized location of all functional areas provide all the tools necessary to collect and distribute information. Figure 11 shows the full potential of information distribution. Within the Air Force, Air Bases and the War Fighting Headquarters can share information between IOCs and the AOC. There was no

such arrangement or even network structures to support this with the Wing Operations Center.

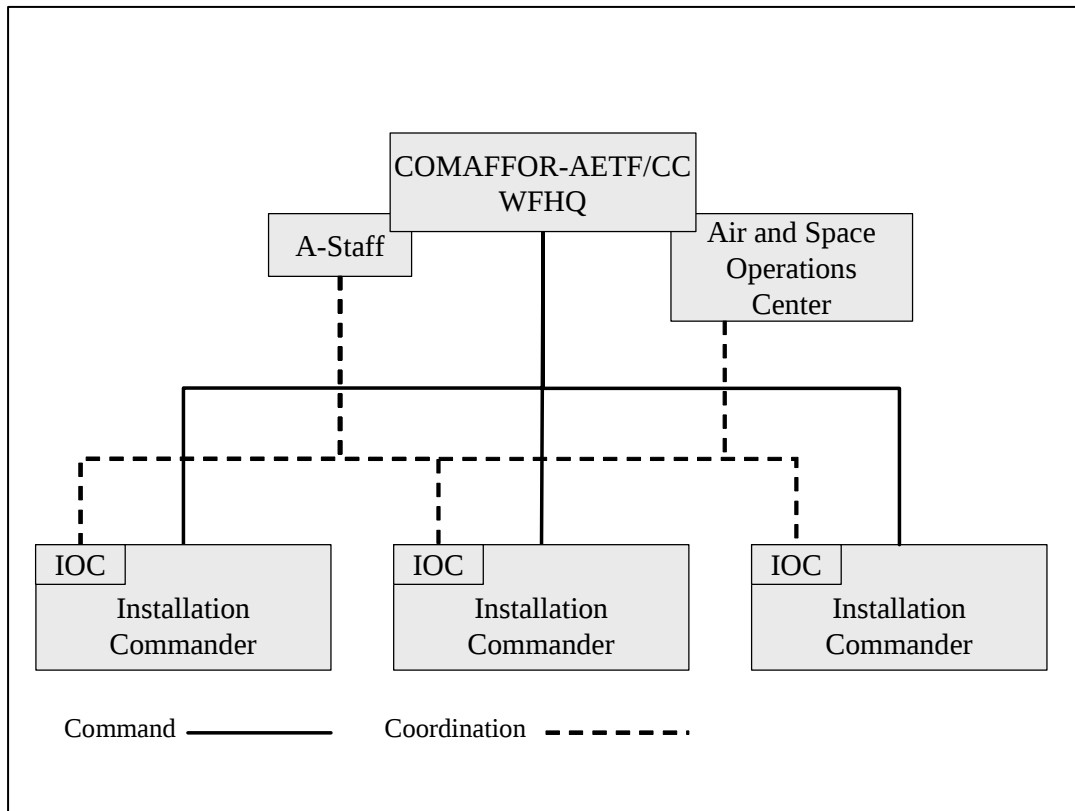


Figure 11. Command and Staff Relationships between AOC and IOC
Source: Lt Col Romrell, Installation Operations Center Enabling Concept (Draft) (Document, 705th TRS, Hurlburt Field, FL, 2005), 8.

How Does the IOC Enable Improved Joint Warfighting?

This section examines the impact the IOC has on C2 node standardization, information sharing, C2 for air base bed down and opening, and the impact on the kill chain. All of these hinge upon a joint language, which will be cemented in doctrine.

Does the IOC Provide Standard C2 Node for Joint Integration

The criteria used to measure the ability to improve joint integration was having joint or “purple” command and control and communication nodes. This is part of the vision for the IOC, however, there is not as much fidelity on the specifics of the nodes at this time. This will improve as joint doctrine is updated and the details of the Warfighting Headquarters (WFHQ) are tied into doctrine and supporting agencies. The best piece of data on the impact the IOC will have on joint integration is from Lt Col Romrell of the 505th Command and Control Wing who stated “The IOC baseline will ensure systems and processes are integrated and interoperable with the operational level C2 nodes (WFHQ AOC and A-Staff) to ensure the rapid and reliable exchange of essential command information.”⁵

Sharing of Information (Horizontal and Vertical)

The ability of the IOC to improve the sharing of information is best summed up by a quote from a draft enabling concepts paper. In the summary it states:

The IOC baseline will ensure systems and processes are integrated and interoperable with the operational level C2 nodes (WFHQ AOC and A-Staff) to ensure the rapid and reliable exchange of essential command information. Furthermore, the IOC baseline will enable standardized training programs and exercises to be developed for personnel assigned to IOC duties. The resulting pool of personnel with portable skills in IOC operations will enhance the professionalism and capabilities of installation C2 world-wide.

The IOC will become a common term, understood by all Airmen to denote a standard arrangement of people, processes, capabilities, and equipment employed to C2 the full range of installation activities.⁶

The measurement used to determine if the IOC would improve this was the ability to share within the USAF and with other DoD agencies. The Air Force C2&ISR center has made all of the connectivity possible and the 505th CCW is ensuring the concept of

the IOC is put into doctrine. These are the key components to make information sharing possible. The final component is execution, which is accomplished through training and operations. Air Force Instruction 10-207 covers these requirements.

Figure 12 provides a picture of the information integration. This is pulled from AFDD 2-8, and is modified by the author to show where the ICC (IOC) interacts with the exchange of data.

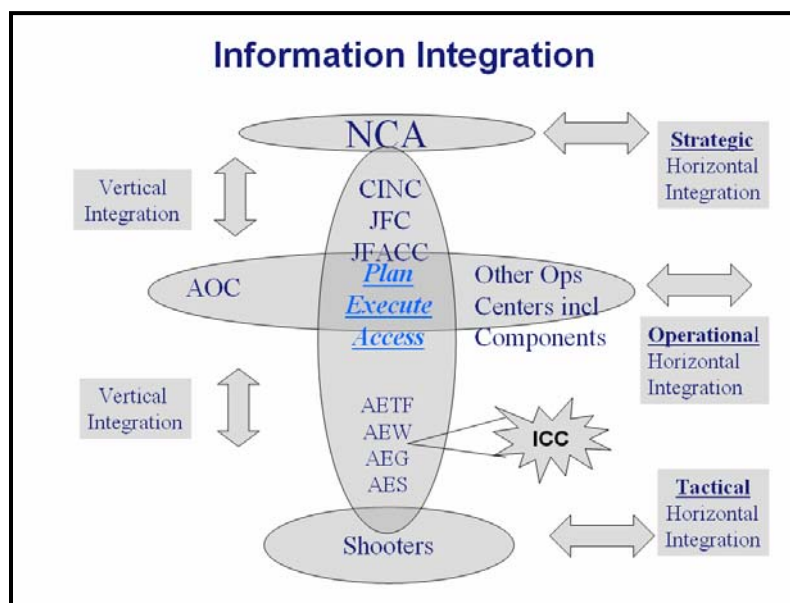


Figure 12. Information Sharing

Source: HQ Air Force Doctrine Center, AFDD 2-8 Command and Control Brief (Briefing, HQ AFDC, Maxwell Air Force Base, AL, 2005), 26. Modified by author for purposes of analysis

Clear C2 for Air Base Bed Down and Opening

As noted in previous chapters the gap between bed down and opening has been identified by not only the Air Force Chief of Staff, but also the Army Chief of Staff.

Identifying the problem at the highest levels in the military is the first step to correcting

the problem. Part of the IOC's vision is to bridge the gap and eliminate the current seam. The way this is being accomplished is through USAF and joint doctrine as well as with the electronic connectivity the IOC provides. What has not been addressed in detail is the training and exercising of the concept. Although a joint doctrine defined command structure and command center should greatly enhance the bed down and opening of an air base it will still require some exercising to find and correct possible shortfalls.

An example of the effectiveness of the IOC is demonstrated by its predecessor the EOC at Al Udeid Air Base. After serving as Expeditionary Ops Group Commander (and acting wing commander) at Al Udeid Air Base, Qatar, during Operation Enduring Freedom, Col William F Andrews, 366 OG/CC, stated: "I was not able to achieve effective command of Al Udeid AB until the EOC was physically in place and operational. It's the only effective way to command that operation."⁷ This is an example of the potential impact the IOC will have on future operations.

Impact on the Kill Chain

There is not much direct information on the impact on the kill chain. However, by improving command and control it would stand to reason the decision making cycle can shorten. If the IOC is used to its full potential actionable information for commanders and aircraft will improve. During a recent deployment, the author witnessed this first hand. On more than one occasion the beta EOC was monitoring combat operations and had the detailed information and expertise to provide the AOC with additional decision making information. This allowed for real time mission changes to respond troops in need of immediate support.

As long as the responsibilities are clearly defined in doctrine the IOC will greatly enhance execution at the tactical level. Additionally, doctrine will help reduce the potential for mission creep.

¹HQ USAF, Air Force Doctrine Document 2, *Organization and Employment of Aerospace Power* (Washington, DC: HQ USAF, 17 February 2000), 133, [document online]; available from <https://www.doctrine.af.mil/Main.asp>; Internet; accessed on 19 September 2005.

²The AEF center provides a more current description and definition for expeditionary. For this paper, doctrine is used as the basis for comparison.

³Col Pat Hoffman, 505 TRG/CC, Installation Control Center (Briefing, 505th Command and Control Wing, Hurlburt Field, FL, 6 January 2006), 5.

⁴Hoffman, 14.

⁵Lt Col Calvin Romrell, USAF, 705th Training squadron/DOC, Air Force Installation Operations Center Enabling Concept (Draft) (Briefing, 705th TRS, Hurlburt Field, FL, 2005), 18. Received via electronic mail on 12 August 2005.

⁶Romrell, 18.

⁷Rick Folio, AFC2TIG/505 OS, Command and Control for Air Expeditionary Wing Commanders (Briefing, 505 OS, Hurlburt Field, FL, 2005), 4.

CHAPTER 5

CONCLUSION

Introduction

The IOC will provide the deployed commander with an improved ability to conduct operations in garrison and while deployed. The research question was, “How will the Installation Operations Center assist the deployed commander to integrate unit level missions into the joint fight?” The intent was to develop a better understanding of the IOC within the joint community and to examine what benefits the IOC provided to the commander. To do this the primary question was broken down into three secondary questions: (1) how does the IOC assist the field commander, (2) how does the IOC integrate the unit level mission, and (3) how does the IOC enable improved joint warfighting?

After researching the available literature and resources relating to the IOC the author determined the IOC has the potential to provide an improvement in all areas. The only area which is questionable is the ability to function in combat as in garrison. These conclusions from chapter 4 are summarized in table 1.

Additionally, this paper provides the reader with resources for further research. The bibliography provides the works cited and referenced for additional works which provide more information on the IOC.

Finally, six considerations are provided for the reader. They are the most significant pitfalls as well as the most significant areas to use the IOC to greatly improve future capability to command and control forces.

Table 1. Summary of IOC's Contributions to the Deployed Commander			
	YES	NO	MAYBE
How does the IOC Assist the Deployed Commander?			
Expeditionary Infrastructure?	Y		
Standardized Command and Control Node?	Y		
Total Complement Functionality (C2, Planning, Support, etc.)?	Y		
Air Base Defense Integration While Continuing the Mission?	Y		
Similar Combat and in Garrison Practices and Structure?			M
How Does the IOC Integrate the Unit Level Mission?			
Does the IOC Provide a Doctrinal Node for External Connectivity?	Y		
Are Fewer Assets Required?	Y		
Is the Same Mission Accomplished in Less Time?	Y		
Does it Improve Information Collection, Analysis, and Distribution?	Y		
How Does the IOC Enable Improved Joint Warfighting?			
Does the IOC Provide Standard C2 Node for Joint Integration?	Y		
Sharing of Information (Horizontal and Vertical)?	Y		
Clear C2 for Air Base bed down and opening?	Y		
Impact on the Kill Chain?	Y		

Findings and Recommendations

1. In Garrison Training Will be a Tremendous Challenge, But Can Be Gapped

Concept briefs have already identified this as a challenge. Due to limitations and requirements at home station, it is complicated to replicate deployed conditions. One problem is the focus of the mission at home station is much broader. During deployed operations, the focus is usually much more intense, but also more narrow. The deployed commander needs to fulfill the requirements of the Air Tasking Order (ATO). The deployed commander is also conducting 24-hour operations seven days a week. So a commander has nearly twice as many man hours and usually has a fairly stable battle rhythm. These are assets the commander does not have at home. The focus is to be prepared to execute the Wing's Design Operational Capability (DOC) statement. While preparing for this mission, the commander must also accomplish many tasks with attached units, civil agencies, higher headquarters, etcetera. which may not directly support the DOC, but are necessary to daily operations.

There are two potential areas to train in garrison. The first is during wing exercises. The down side to this is too many exercises will over task the personnel on a wing by artificially elevating the operations tempo. Exercises can still be used to train; they may just need to be changed slightly. One way to make the best use of the exercise is to have a rehearsal prior to the execution. A simple rehearsal run and walk through can help prepare those who will run the IOC, help identify any shortfalls, and also help refamiliarize everyone with the exercise battle rhythm.

The other way to train in garrison is to use major exercises outside the base such as Red Flags, Cope North, etcetera to help simulate a combat operation. This is an

excellent time to test the full capability of the IOC. The need to deploy, execute, and redeploy will stress almost all functions of the IOC. Additional considerations to consider are added elements outside the normal operations focused exercises to help train the support functions of the IOC. Examples include a diverted aircraft exercise. This would task the logistics section, the IOC director, operations, maintenance, and personnel. Simple tasks such as passenger manifests, equipment requirements, spare parts, accountability, etcetera would be exercised. This would force full IOC integration to successfully accomplish the tasking.

The shortfalls of this plan are facility support to set up the IOC, the challenge of adding exercise inputs which do not detract from the main exercise, and losing focus on the exercise objectives.

2. Clear C2 Guidance Needs to Be Provided in Joint Doctrine to Achieve Joint Integration

One of the biggest lessons I learned attending a sister service intermediate level education course, is the importance of a common language. Although the services fight side by side with similar concepts, the way we communicate intent and guidance is often very different. This is why a common language grounded in joint doctrine is essential to joint integration. The IOC may be an incredible capability which can improve joint integration at all levels, but if it is only defined in USAF doctrine it will be impossible to explain what it does to anyone outside the USAF. Joint doctrine is key to providing the context and definition to avoid stove piping a critical enabler in the joint C2 structure.

3. The IOC Should Be Run by Someone Very Skilled and Who Is Painful to Give Up

Rank and capability are the two key challenges with running the IOC. A Lieutenant Colonel is probably the best rank to run the IOC. The timely nature and requirements of the IOC mission during deployed operations requires instant recognition across the DoD. Military rank is a quick way to establish this. After credibility is established by rank, it must be maintained by capability. If the IOC director does not have the skills and leadership he will be quickly become an obstacle for the rest of the deployed unit to avoid or bypass to complete the mission.

The IOC director may also be an excellent place for preparation for command. Similar to wing safety and squadron director of operations, the IOC director requires a broad understanding and provides a unique immersion into all aspects of a wing.

4. Improved Visibility of Current Operations May Increase the Potential to Micro Manage

At a recent briefing at the Army Command and General Staff College, Lt Gen (ret) Short mentioned that 80 percent of the JFACC's time should be spent in plans, not in operations. He commented that a General officer does not need to move two F-16s around on a screen. This same concept applies to the IOC. Although some missions and tasks may require a closer and more near-sited supervision, the best use of the IOC is to use actionable information to help the commander build the plan two to three days out versus the plan being executed today.

5. Standard Operating Procedures for Briefings, Format, Battle Rhythm, Etcetera Need to be Developed for the IOC

To make the transition from garrison to deployed operations a USAF unit must have a standard way to communicate information within and outside the IOC. This is an area where sister service practice should be reviewed for ideas. The Army, for example, has a specific planning process which assigns responsibilities, definitions, content, etcetera. to include so the commander can use his staff efficiently and make timely informed decisions. This needs to be accomplished in similar form to allow an efficient transition from in garrison operations to combat operations. It is also imperative if the IOC is to be truly expeditionary in nature. Personnel filling the IOC may not be from the host unit, without a universal standard, much time will be lost reinventing the wheel, to present the same required information in a different format.

6. The IOC Can Provide an Excellent Opportunity to Gain Experience to Later Operate in or Run an AOC

The opportunity for leadership development was mentioned earlier when discussing the IOC director. A similar opportunity exists for commanders and personnel in the IOC. Until the IOC, there was no subordinate operations center similar in function and connectivity as the AOC. Because of this, most experience for JFACCs came in the form of exercises and at a much more senior level. The IOC can provide commanders the opportunity to operate an operations center similar to the AOC, gaining valuable experience as early as group command. Although, the IOC is vastly different in mission and responsibility, the information and personnel challenges are similar.

The IOC can also provide an early experience base for those who will eventually function as Liaison Officers (LNOs) or who will be assigned to the AOC. Once again, this has not been possible until the IOC was developed.

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