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A Report on Unified Quest 2004

David E. Johnson, Peter A. Wilson,
Richard E. Darilek, Laurinda L. Zeman

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Preface

Unified Quest 2004 (UQ 04), the second wargame cosponsored by Joint Forces Command and the United States Army, took place on May 2–7, 2004. The purpose of the game was “to explore concepts and capabilities that enable Joint Operations Concepts” and to continue the process begun in Unified Quest 2003 (UQ 03) of “better defining Joint and Future Force concepts and capabilities, identifying key issues, insights, and implications and in addressing [specific] Unified Quest Issues.”

RAND Arroyo Center provided analytic support both before and during the game. The pre-game events were important, because they helped frame the study questions, objectives, and issues that would be examined. During the actual game, senior RAND Corporation analysts participated in all of the game panels, and two senior analysts participated in the daily senior mentor and commanders’ insight sessions and provided inputs to the Integration Team. This document summarizes the analysts’ insights with respect to the war-game study issues and the conduct of the game itself. It also identifies issues that emerged from the game and briefly explores their implications.

The U.S. Army Training and Doctrine Command sponsored this research. It was conducted in the RAND Arroyo Center Strategy, Doctrine, and Resources Program. The RAND Arroyo Center is a federally funded research and development center sponsored by the

U.S. Army. Comments and inquiries should be addressed to Dr. David E. Johnson at davidj@rand.org. He can also be reached at (703) 413-1100.

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Summary

An overarching assessment of Unified Quest 2004 (UQ 04) shows that it clearly met its objectives, largely because of the environment within which it took place. It was notable for its professionalism, candor, and objectivity. The open environment at UQ 04 enabled participants to grapple with the difficult issues raised during the wargame and to pose constructive challenges to evolving joint and Service concepts when the concepts proved inadequate to deal with those issues. In short, the wargame met its charter of testing concepts to failure by asking the right questions and going where the evidence led. Consequently, evolving joint and Service concepts will be strengthened if the insights from UQ 04 inform their development.

Pre-Game Activities

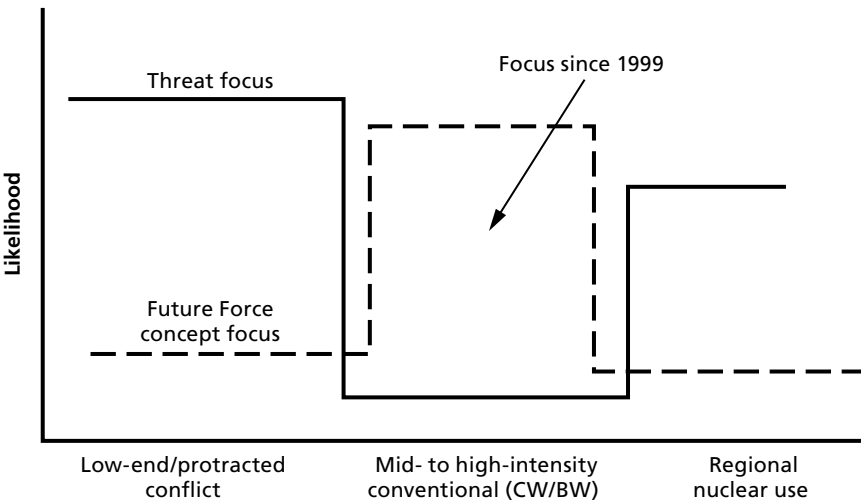
A wargame succeeds or fails depending on the questions it poses. A strength of UQ 04 was the preparatory activities that helped define the main issues for investigation. The central study question reflected a consensus among game designers that insights gained from Unified Quest 2003 (UQ 03) required a rethinking of the conceptual premises that were going to be assessed in UQ 04. The question evolved from an insight from UQ 03 that “Blue’s overwhelming conventional strength may change Red’s investments, options, and strategy.” During UQ 03, it became clear that Red forces in both theaters realized they could not defeat Blue’s conventional military capability. Thus, a

key insight was that “the tactical and operational fight in the future could be much different than currently envisioned.” UQ 03 participants realized that future adversaries might resort to nuclear weapons to compensate for their conventional inferiority.

The first Future Warfare Seminar (one of two that preceded the game) examined this issue of conceptual discontinuities between U.S. forces and potential adversaries and developed the graphic in Figure S.1.

Figure S.1 depicts the notion that U.S. military forces have focused on developing concepts that address mid- to high-intensity conflict. UQ 03, as well as the “post-conflict” phases of ongoing operations in Afghanistan and Iraq, has made it clear that the successful execution of major combat operations—which overwhelming U.S. conventional capability almost guarantees—does not necessarily spell victory. It logically follows, then, that concepts explored in wargames focused primarily on mid- to high-intensity conventional combat op-

Figure S.1
The Adaptive Threat and Concept Development



erations would lack the fidelity to be suitable for dealing with operations on the opposite ends of the spectrum. In short, these potentially difficult operations are not lesser-included cases for what is supposed to be a full-spectrum force. Consequently, the low end of the conflict spectrum, in particular, requires a rigorous review and perhaps a new, more expansive theory of conflict and supporting operational concepts.

Game Scenario and Objective

UQ 04 was an extension of UQ 03, in which a U.S.-led coalition engaged in two overlapping major combat operations, one in Southwest Asia (Nair) and one in the Southeast Asia (Sumesia) in 2015. UQ 04 began with what Blue believed was the culmination of major combat operations in both theaters and the beginning of the transition to post-conflict operations. In Southwest Asia, the coalition sought to secure the nuclear arsenal and associated infrastructure, defeat remaining military and paramilitary forces, install a new regime, and stabilize the country. In Southeast Asia, the goal was to defeat the ongoing insurgency and to restore control of the country to the government. In reality, however, Red retained significant conventional and unconventional military capabilities in both Nair and Sumesia. In Nair, Blue believed that it was in a transition from major combat operations to post-conflict operations. In reality, Red had dispersed its conventional and paramilitary capabilities in a coherent territorial defense and was waiting for the right opportunity to launch counter-offensives against Blue. In Sumesia, Red retained the capability to conduct irregular warfare in an insurgency. Therefore, the conditions for post-conflict operations were not attained in UQ 04.

The central study question for the wargame focused on identifying the concepts and capabilities required to counteract an adversary who, having lost most of his conventional capability, seeks victory through a combination of protracted, unconventional operations and use of weapons of mass destruction (WMD). Game designers posed the following analysis question: “How does the joint force

conduct and sustain simultaneous distributed maneuvers in a non-contiguous battlespace?”

Issues and Insights from UQ 04

UQ 04 also addressed a broad range of study issues and essential elements of analysis grouped under five areas. RAND data-collection and analytical efforts focused on capturing high-level issues and insights in these five areas.

1. Joint Command and Control

These issues center on synchronization: How do joint, interagency, and multinational forces synchronize their objectives, their efforts to achieve these objectives, and their forces (fire and maneuver) in non-contiguous operations?

Sumesia. Important issues in this context involved the form that command and control (C2) arrangements might take in transitioning from coalition to indigenous government control. These were largely reporting issues involving when command of the Combined Joint Task Force (CJTF) should shift from “being supported” to “supporting.” One interesting definition of the desired end-state put forward in this connection was that it has been achieved when CJTF hands the command of all forces in Sumesia back to CJFSOCC (Combined Joint Force Special Operations Component Commander, i.e., the commander of Special Operations Forces), which was where command resided before the conflict escalated.

Nair. The C2 issues involved in conducting coalition operations, urban operations, and logistics support of a theater that had six widely dispersed lines of operation were the subject of numerous player discussions. Nevertheless, UQ 04 did not have sufficient resolution, certainly for the Blue strategic/operational group, to explore these C2 issues at other than a subjective, nontechnical level. These technical issues are not trivial, and the C2 insights from the game should serve as the basis for more in-depth post-game analyses.

2. Battlespace Awareness

The issues here focus on information requirements; in particular, how the joint force reacts to unexpected situations and identifies, assesses, and mitigates risks associated with a lack of information.

Sumesia. Information sharing with country teams and coalition forces was convoluted. Separate networks for information sharing and fusion had to be established in every case. In 2016 satellite coverage will be robust, but information sharing probably will not be, because solutions to the problem of exchanging data across the various institutional and organizational stovepipes that exist today seem less likely to be forthcoming. Technology for data collection may improve, but management systems for dealing with it may not keep pace.

The operational result of poor battlefield awareness was the Blue Team's total surprise at Red's counteroffense against Blue's military campaign. The Red counterattack revealed a serious misapprehension—a lack of battlefield awareness—by Blue of what insurgents in Sumesia still had available to wage war.

The high-level issue is how to satisfy the need for battlespace awareness when confronting an insurgency (or, for that matter, more conventional warfare) and how to communicate awareness to everyone who needs to know. The information required in this case is harder to come by, because adversaries that assume an irregular form are more difficult to understand and track than conventional military forces.

Nair. Blue had major problems gaining sufficient battlespace awareness. It became apparent that the Blue intelligence collection cell was focused solely on the allocation of surveillance assets to support the lines of advance into Nair. Thus, there was an inordinate focus on the collection and data transmission phases of the intelligence cycle. There appeared to be little appreciation that the most serious roadblock was turning the terabits of data into useable information. To compensate for the inadequacies of standoff surveillance, the intelligence cell deployed a robust array of human intelligence assets, specifically special operations units. The issue of scale and coverage by these units was acknowledged as a serious challenge, especially during the evolving siege of Nair's capital.

3. Force Application

The issues here involve how joint (and presumably coalition) forces conduct shaping operations, achieve joint effects, engage in and sustain simultaneous distributed maneuvers in a non-contiguous battlespace, execute major combat and stability operations in transition or simultaneously, and operate in urban terrain.

Sumesia. The Blue Force found itself overextended both operationally and logistically, conducting distributed, non-contiguous operations in five areas of responsibility within a very large country. One approach to mitigating this problem was to use the country's internal boundaries as operating boundaries for coalition forces and to coordinate coalition activities by establishing the Sumesia Coordination Council.

Trouble started with the last turn of the exercise when the insurgents struck across a broad, non-contiguous front. Problems of transition from major combat operations to stability and support operations suddenly became acute. When the insurgents struck back unconventionally and in force during the last game turn, Blue faced unexpected problems. Instead of transitioning from major combat operations to relatively straightforward stability and support operations, which it could look forward to handing off as soon as possible to the Sumesian government, Blue now faced a major insurgency requiring the application of additional force by the full coalition. In short, a much longer, more problematical security situation that precluded the transition expected by Blue. The key point here, and in Nair as well, is this: Unless destroyed outright, the enemy, not we, decides when conflict ends and transition begins.

The big issue in this context is how, when, and where to apply force against an insurgency that has faded, perhaps temporarily, from a once-prominent conventional threat into a degraded but persistent asymmetric threat drawing strength from a rural base in the countryside. Also, what is the proper force mix to apply against such a threat?

Nair. One of the most important insights to emerge from Blue's exercise experience was the revelation that there are few, if any, credible "combat" measures of effectiveness for counterinsurgency, urban combat, or stabilization operations. How to determine whether one

was winning or losing remained an unanswered qualitative or quantitative question. The analytical community faces a major challenge in developing viable measures of effectiveness in these areas.

4. Focused Logistics

The insight here concerns seabasing and how it might affect deployment, employment, and sustainment of joint forces.

Sumesia. A logistician's nightmare, Sumesia involves a variety of coalition forces operating in jungle terrain. Ground lines of communication (LOCs) are long and vulnerable. Insurgents regularly interdict them. Seabasing, despite several significant limitations, appears to provide a promising alternative, especially as a way of dealing with resupply issues made more difficult by the insurgents' targeting of ground supply routes. Potentially, seabasing can also provide secure platforms for the initial deployment and subsequent maneuvering of coalition forces as well as for the treatment of casualties. Medical care, in particular, seems to lend itself to a sea-based solution in this largely maritime theater.

The high-level issue in focused logistics, as it relates to Sumesia, is how much seabasing is enough to balance the Blue force's risk and improve the overall security of its LOCs for deployment, maneuver, and resupply—and how much ashore capability can it supplant in protracted operations that require considerable ground operations. Secure land bases and sea ports will still be required to handle the throughput of coalition logistics and other (e.g., deployment, maneuver) operations. But seabasing makes it possible to reduce, if not entirely eliminate, the logistics footprint on land. Like a good portfolio strategy for the stock market, seabasing hedges a joint/coalition force's bets by distributing them across a variety of options. Loss of one asset, therefore, does not trigger catastrophic failure.

Nair. The Blue logistics cells acknowledged that the support system for the six lines of advance (which also created significant operational issues) into Nair was overstretched. A key vulnerability for the theater logistic system was the very long multiple land LOCs that were constantly interdicted. One tactical commander of a line of advance acknowledged that 50 percent of his combat forces were tied

up in LOC security operations. Thus the interest in the Joint Precision Air Drop System technology as a partial answer to this problem is unsurprising. Several logistics players believed wide-body aircraft using precision airdrop systems from medium altitude warranted further consideration.

One underplayed aspect was the consequences of managing very large refugee and enemy prisoners of war populations. Played more accurately, requirements to deal with these populations would probably have significantly increased logistical requirements, required more forces to control and secure them, and placed further demands on the LOCs.

5. Force Protection

These issues center on LOC control and protection during operations. Theater air and missile defenses are also involved, as is the U.S. Navy's Sea Shield.

Sumesia. Once the conflict shifted from conventional war to unconventional insurgency, Red focused on Blue's logistics and its LOCs as a key vulnerability, and it started to attack them as a matter of priority. This forced Blue to secure its LOCs. Considerable numbers of coalition forces had to be dedicated to protecting Blue's ground and riverine LOCs, which were extensive. Elsewhere, Blue appeared to provide fairly seamless theater air and missile defense protection. Red's ground-based, passive air defense systems (guns and man portable air defense systems), however, proved a challenge, as they do today, to low-altitude Blue air operations.

The key issue in this area involves the size of the total force that joint and coalition partners need to plan on fielding in cases such as Sumesia. When a conventional conflict morphs into an irregular warfare, as in this case, interior lines of communication can be placed in jeopardy. Sufficient forces have to be dedicated to removing such risks and providing security—and the number of those forces can be considerable when long LOCs and significant geographical areas are involved.

Nair. As noted above, force protection for the LOCs supporting six lines of advance was a major challenge and consumed a significant

portion of the combat power of each line of advance. The game ended before there was a decision to conduct an all-out assault on the capital. But several participants acknowledged that such a fight would have taken substantial resources, especially combat units, that would likely have to be taken away from some other line of advance. Such a reallocation of forces would have created additional force protection issues on the lines of advance where these forces were drawn from, given the reality that there were no surplus coalition forces in the theater. Finally, Red viewed the weakening of coalition forces along a given line of advance as an opportunity to conduct a counteroffensive.

Recommendations for Improving the Future Warfare Studies Program

Perhaps the most important recommendation is that offered by Army Chief of Staff General Peter Schoomaker. He noted that knowing now how the plans posited in UQ 03 played out in UQ 04, the Army should design a campaign that incorporates the lessons from both events. In short, knowing the outcomes of UQ 04, how should the Army redesign the campaign plan to achieve the desired end-states?

One of the key points brought up in UQ 04 was a necessary change in conceptual approach. The game employed a sequential approach: major combat operations followed by stability operations. This approach proved problematic when joint concepts focusing on major combat operations had trouble in dealing with an enemy that, although perceived by Blue as largely defeated as forces in the field, was able to continue the conflict through protracted unconventional operations and with the lingering threat of employing WMD to buttress its efforts. Furthermore, the Blue assessment of Red in both theaters, i.e., that it had been “largely defeated as forces in the field,” was inaccurate. Red, particularly in Nair, had dispersed its conventional and paramilitary forces in the face of overwhelming Blue air, command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR), and conventional capability.

The Red commander thus retained a significant military capability to continue what he viewed as an integrated defense of Nair and to conduct counteroffensives against Blue. This reality argues that joint and Service future warfare concepts must be grounded in a campaign approach whose goal is a political end-state. And this political end-state can be attained only through the defeat or capitulation of Red military and paramilitary forces, which itself can be achieved only if one thoroughly understands the adversary, his intentions, and what constitutes defeat in his eyes. This military condition was never met in Nair or Sumesia. Consequently, the strategic political end-state was never achieved, nor were the challenges to achieving it fully understood by Blue.

UQ 04 also raised several significant issues that should be included in the studies program, including: nuclear weapons; urban operations in mega-cities; unconventional counterinsurgency and counterpartisan operations; joint, interagency, multinational, and nongovernmental coordination; doctrinal dilemmas; and assessing technical assumptions.

This last area warrants some additional discussion. In UQ 04, as in the games that preceded it, many technology-based capabilities were required to realize operational concepts. Frequently, however, these technological enablers, regardless of operational conditions, were employed with little thought to their potential limitations in those conditions. This was particularly true with regard to C4ISR technologies that directly enable joint C2 and battlespace awareness and also affect force application, focused logistics, and force protection. The implications of a broad range of C4ISR technological assumptions are critical to the resolution of most UQ 04 study issues and fundamental to the realization of the concepts for the Future Force, but they are rarely a focus of specific analysis in and of themselves. In short, it is perhaps time to begin analyzing the technical assumptions (and operational assumptions) embedded in Future Force concepts so that we can begin to understand what inherent limitations might exist in diverse operational environments and to suggest alternatives to address any identified gaps.

This study also makes recommendations for improving the analytical methodology of the Future Warfare studies program. It suggests ways to reframe relevant study issues and essential elements of analysis. It further recommends improving the Future Warfare studies program's analytical process by conducting, apart from the annual wargame, tightly focused seminars or exercises that investigate a single emerging insight or area requiring increased analytical effort. The results of these investigations could then be fed back into the concept and force development processes that culminate in the wargame.

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Abbreviations

AAN	Army After Next
AMEDD	Army Medical Department
AOR	area of responsibility
AT-CDEP	Army Transformation Concept Development and Experimentation Plan
BA	battlespace awareness
BW	biological warfare
C2	command and control
C4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CCIR	commander's critical information requirements
CJFSOCC	Combined Joint Force Special Operations Component Commander
CJTf	Combined Joint Task Force
CS	combat support
CSS	combat service support
CW	chemical warfare
EEA	essential element of analysis
EEI	essential element of information
FA	force application
FCS	Future Combat System

FL	focused logistics
FP	force protection
FY	fiscal year
HUMINT	human intelligence
ICT	Integrated Concept Team
IGS	Integrated Gaming System
IO	information operations
IPB	intelligence preparation of the battlefield
ISR	intelligence, surveillance, and reconnaissance
JFCOM	U.S. Joint Forces Command
JIACG	Joint Interagency Coordination Group
JIM	joint interagency and multinational
JPADS	Joint Precision Airdrop System
JSOA	Joint Special Operations Area
LOC	line of communication
MANPADS	Man Portable Air Defense System
MCO	major combat operations
METT-TC	mission, enemy, terrain and weather, time, troops available, and civilian
OPSEC	operational security
RFI	request for information
SIGINT	signals intelligence
SLS	Senior Leader Seminar
SOF	special operations forces
TAMD	Theater air and missile defense
TRADOC	U.S. Army Training and Doctrine Command
UA	unit of action
UAV	unmanned aerial vehicle
UE	unit of employment

UQ	Unified Quest
VTOL	vertical takeoff and landing
WMD	weapons of mass destruction

Introduction

Unified Quest 2004 (UQ 04), the second wargame cosponsored by the U.S. Joint Forces Command (JFCOM) and the United States Army, took place at the U.S. Army War College, Carlisle Barracks, Pennsylvania, on May 2–7, 2004. The overarching purpose of UQ 04 was “to explore concepts and capabilities that enable Joint Operations Concepts” and to continue the process begun in Unified Quest 2003 (UQ 03) of “better defining Joint and Future Force concepts and capabilities, identifying key issues, insights, and implications and addressing [specific] Unified Quest Issues.”¹

UQ 04 clearly met these objectives, largely because of the professionalism, candor, and objectivity that its environment encouraged. In this regard, the results of UQ 04 met the charge presented to wargame participants in their game books:

UQ 04 is the logical next step in an evolution of gaming events that began in the 1990s. Far from being rooted in the past, however, UQ 04 encourages bold, imaginative thinking to resolve national security issues and threats that are likely to confront us in coming decades. Its fundamental nature as a jointly cosponsored game ensures exploration of joint operations and joint operational concepts in a challenging environment that emphasizes innovation and rigorous assessment.²

¹ U.S. Army Training and Doctrine Command (TRADOC) (2004d), p. 13. The UQ 04 Study Issues and Essential Elements of Analysis are in the appendix to this report.

² U.S. Army TRADOC (2004c), p. 5.

The open environment at UQ 04 enabled participants to grapple with the difficult issues raised during the wargame and constructively challenge evolving joint and Service concepts when they proved inadequate to deal with those issues. In short, the wargame met its charter of testing concepts to the point of failure by asking the right questions and going wherever the evidence may lead. Consequently, evolving joint and Service concepts can be strengthened if the insights derived from UQ 04 are taken into account in the further development of these concepts.

Unified Quest 2004 Scenario

UQ 04 extended the scenarios initially developed by UQ 03. In UQ 03, a U.S.-led coalition engaged in two overlapping major combat operations in the Southwest Asian nation of Nair and in the Southeast Asian nation of Sumesia in the year 2015. Nair, a major regional power, was within 30 days of possessing the capability to promptly deliver nuclear weapons via intercontinental ballistic missiles targeted against the U.S. homeland. The United States led a coalition to prevent Nair from deploying this nuclear capability and to change its regime. In Sumesia, the United States, the United Kingdom, and Australia conducted operations to assist the government in its fight against a destabilizing insurgency. UQ 03 concluded with Blue believing that major combat operations in each of these theaters were approaching culmination.³

UQ 04 began in 2016 with what Blue perceived to be the climax of major combat operations in Nair and Sumesia and the beginning of transitions to post-conflict operations in each theater.⁴ In Nair, the coalition sought to secure that state's nuclear arsenal and

³ U.S. Joint Forces Command and U.S. Army TRADOC (2003), pp. 6–7.

⁴ U.S. Army TRADOC (2004d), p. 3.

associated infrastructure, defeat remaining military and paramilitary forces, install a new regime, and stabilize the country. In Sumesia, the goal was to defeat the ongoing insurgency and to restore control of the country to the government. In reality, however, Red retained significant conventional and unconventional military capabilities in both Nair and Sumesia. In Nair, Blue believed that it was in a transition from major combat operations to post-conflict operations. In reality, Red had dispersed its conventional and paramilitary capabilities in a coherent territorial defense and was preparing for counteroffensives against Blue, as opportunities presented themselves. In Sumesia, Red retained the capability to conduct irregular warfare in an ongoing insurgency in which it largely controlled the level of violence. Therefore, the conditions for post-conflict operations were not attained in UQ 04.

Additionally, several assumptions in the wargame scenario provided a broader geopolitical context for UQ 04 participants:

- There has been no major change in the nature of the nation-state system.
- Alliances and coalitions continually form and change based on the security and economic interests of members.
- There have been no major changes in the nature of the global economic system, despite increases in economic interdependence and the proliferation of information technology.
- All existing international organizations are extant in 2016.
- All existing international treaties, organizations, [and] agreements remain in force, except as specified in the scenario.
- The U.S. government, its branches, departments, and organizations (to include the military Services) continue to exist and operate as they do in 2004.⁵

⁵ U.S. Army TRADOC (2004d), p. 3.

Central Study Question and Objectives

The central study question posed for the UQ 04 was the following:

Identify the concepts and capabilities required to counteract an adversary who, having lost most of his conventional capability, seeks decision through a combination of protracted, unconventional operations and WMD employment.⁶

From this central study question, the designers of the wargame posed the following question for analysis: “How does the joint force conduct and sustain simultaneous distributed maneuvers in a non-contiguous battlespace?”⁷

To address the central study question and the principal analysis question, the wargame analytical plan focused on wargame objectives and study issues. JFCOM and the Army agreed on the four following objectives for UQ 04’s exploration of concepts for the application of joint, interagency, and multinational capabilities:

- *Major combat operations.* Explore concepts for the application of national, joint, combined, and Service capabilities to defeat adversary forces and establish stable conditions for conflict termination to inform the MCO (major combat operations) Joint Operating Concept.
- *Transition to post-conflict operations.* Explore concepts for the application of national, joint, combined, and Service capabilities to transition from decisive operations to conflict termination and post-conflict operations to inform MCO and Stability Operations Joint Operating Concepts.
- *Stability operations.* Explore the concepts, capabilities, and force designs required to conduct simultaneous major combat and stability operations in a distributed, non-contiguous battlespace to inform the Stability Operations Joint Operating Concept.

⁶ U.S. Army TRADOC (2004d), p. 2. As it is phrased, the central study question is an overarching study objective, rather than a “question.”

⁷ U.S. Army TRADOC (2004d), p. 2.

- *Network-enabled battle command.* Explore network-enabled battle command and the unit of employment's (division) ability to conduct shaping and decisive operations in urban terrain in order to support the fiscal year 2005 (FY05) AT-CDEP [Army Transformation Concept Development and Experimentation Plan] and the MCO and Stability Operations Joint Operating Concepts.⁸

UQ 04 study issues and essential elements of analysis (EEAs) were grouped under five areas:

- Battlespace Awareness (BA)
 - BA.1. How are joint force information requirements developed, satisfied, and used?
 - BA.2. What are the implications on operational concepts and force attributes of not achieving information superiority?
- Joint Command and Control (C2)
 - C2.1. How do joint, interagency, and multinational forces synchronize objectives to achieve end-state in major combat and stability operations?
 - C2.2. How does the joint force synchronize joint, interagency, and multinational (JIM) efforts to achieve campaign objectives?
 - C2.3. How does the joint force synchronize fires and maneuver in non-contiguous operations?
- Force Application (FA)
 - FA.1. How does the joint force conduct continuous shaping operations in support of multiple distributed maneuvers?
 - FA.2. What are the joint interdependencies required to achieve effects at the point of action?
 - FA.3. How does the joint force conduct and sustain simultaneous distributed maneuver in a non-contiguous battlespace?

⁸ U.S. Army TRADOC (2004d), pp. 2–3.

- FA.4. What are the capabilities and force attributes required to execute major combat and stability operations simultaneously?
- FA.5. What are the capabilities required to conduct joint urban operations?
- Force Protection (FP)
 - FP.1. How are joint, interagency, and multinational (JIM) capabilities used to protect forces during operations?
 - FP.2. How does the joint force control and protect LOCs while conducting simultaneous, dispersed operations?
- Focused Logistics (FL)
 - FL.1. How is the joint force deployed, employed, and sustained in a campaign?
 - FL.2. What are the effects of deployment on the campaign?⁹

Unified Quest 2004 Game Design

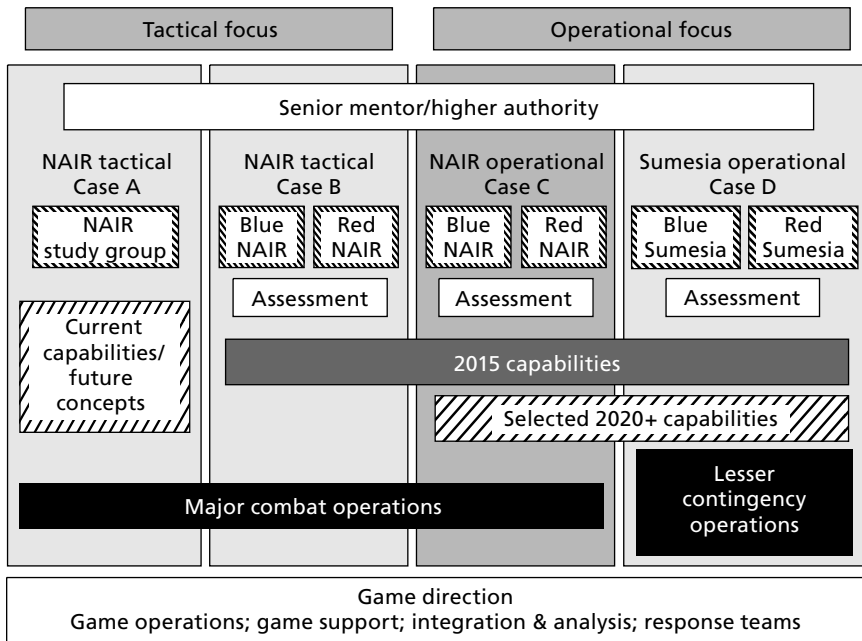
UQ 04 was structured around four panels, designated Cases A, B, C, and D. A discussion of each case panel and the supporting wargame organization follows. See Figure 1.1 for a diagram of UQ 04's Game Design.

Case A was a study group composed primarily of students from the Army War College and the Command and General Staff College. Case A focused at the tactical level in the Nairian theater and developed its plans by using current capabilities to realize and prosecute future concepts in a future environment. The group also examined the utility of employing the force using emerging Army concepts for brigade combat teams.

Cases B, C, and D were competitive panels, each consisting of a Blue Team and a Red Team. Case B focused on tactical-level requirements in Nair. Cases C (Nair) and D (Sumesia) focused on the theater level. Each panel responded to requirements using capabilities

⁹ U.S. Army TRADOC (2004a). The appendix to this report contains the full list of UQ 04 Study Issues and Essential Elements of Analysis.

Figure 1.1
Unified Quest 2004 Game Design



SOURCE: U.S. Army TRADOC (2004d), pp. 6–8.

RAND MG391–1.1

as well as concepts anticipated to be available in 2016. Cases C and D also examined selected capabilities that are expected to be available in 2020 and later.

Three assessment teams were assigned to Cases B, C, and D to adjudicate the results of Red and Blue planning and operations. The Assessment Teams were a key component of the UQ 04 insight discovery process. They were relied upon heavily to achieve study objectives.

A Senior Mentor/Higher Authority Cell examined strategic issues and provided policy and strategic direction for the Red and Blue teams. This group consisted of a diverse group of senior military officers, former senior civilian government officials, and internationally recognized academics. The cell divided its time between meeting in

seminar as a panel and providing on-site mentoring and problem-solving for the other teams.

A Joint Interagency Coordination Group (JIACG) served as an extension of the Blue commander's staff in Cases B, C, and D; conducted staff planning; and addressed specific questions associated with the interagency process. This group responded to planning requirements from each of the three Blue teams.

The Integration and Analysis Team was responsible for capturing and integrating critical elements of game discussions. The team captured and reviewed key issues and insights that evolved from game play, assessments of the interaction of the Red and Blue team plans, and Senior Mentor Issue Seminars. This team was also responsible for the organization and preparation of substantive issues for the post-game Senior Leadership Seminar, which took place soon after the game's conclusion.

The Request for Information (RFI) Cell, composed of subject matter experts, was responsible for responding to requests for information from the Red and Blue teams, the assessment teams, Case A Study Group, and the JIACG. The RFI Cell responded to questions of deployment and sustainment feasibility, as well as questions regarding information not contained in the various game materials available to players and teams.

Game support was provided to the teams and panels by the Integrated Gaming System (IGS) Team; facilitators who assisted team leaders in developing issues and keeping panels on track with respect to requirements and objectives; personnel who assisted in satisfying technical and nontechnical requirements; and an administrative/game support group that was responsible for administrative and logistics requirements.

The Game Direction Cell provided oversight and modified scenarios and requirements to conform to UQ 04 objectives as the game unfolded. This cell also incorporated elements of the Game Operations, Game Support, and Response Teams as necessary to respond to information requests from the player teams and the Integration and Analysis Team. The cell coordinated activities across the teams and

acted as a court of last resort to adjudicate disputes that could not be resolved at other levels.

Organization of This Report

The remainder of this report focuses on two broad areas. Chapter Two contains a discussion of the observations of the four RAND analysts who attended UQ 04, including an assessment of the wargame keyed to the five study issue areas. Chapter Three offers RAND's suggestions on ways to improve the Joint Forces Command/TRADOC study program. An appendix contains the full list of UQ 04 Study Issues and Essential Elements of Analysis.

RAND's Observations

This chapter discusses the role of RAND analysts in supporting UQ 04–related activities and provides their observations in several areas. These observations generally do not revisit ground covered in the UQ 04 Senior Leader Seminar.

RAND Support of UQ 04 Activities

RAND supported UQ 04 in several ways. Senior RAND analysts participated in various pre–UQ 04 events, including the National Security Seminar, two Future Warfare Seminars, and the Operations Workshop. These pre-wargame events were important, because they helped frame the study questions, objectives, and issues to be examined in UQ 04. Additionally, RAND participated in reviews of emerging Joint Operations Concepts and prepared a feasibility analysis of the potential to support combat operations in the northern sector of the Nairian theater by aerial (precision air drop) resupply.

During UQ 04, senior RAND analysts were embedded in all four case panels (Case A, Nair Study Group; Case B, Nair Tactical; Case C, Nair Operational; Case D, Sumesia Operational). Additionally, two senior analysts participated in the daily senior mentor and commanders' insights sessions and provided inputs to the Integration Team.

RAND Insights from Pre-UQ 04 Activities

Perhaps the most important result of pre-UQ 04 activities was the determination of UQ 04's central study question:

Identify the concepts and capabilities required to counteract an adversary who, having lost most of his conventional capability, seeks decision through a combination of protracted, unconventional operations and WMD employment.¹

Origins of the Central Study Question

The central study question reflected a consensus among UQ 04 designers that insights gained from UQ 03 required a rethinking of the conceptual premises that would be assessed in UQ 04. The question evolved from a UQ 03 insight that "Blue's overwhelming conventional strength may change Red's investments, options, and strategy." During UQ 03 it became clear that Red forces in both Nair and Sumesia "fully realized that they could not defeat Blue's conventional military capability at the tactical levels inside their own countries."² Indeed, at the end of UQ 03, it was apparent that Red forces in each theater had adopted a strategy of confronting Blue at the ends of the spectrum of conflict where Red had asymmetric advantages.³ Quite simply, Blue forces were faced with the prospect of a protracted conflict in both theaters against adversaries who had retained significant conventional and unconventional military capabilities and, in the case of Nair, still possessed WMD—including nuclear weapons—and forces that could resume major combat operations at moment of their choosing. This situation produced the insight from UQ 03 that "the

¹ U.S. Army TRADOC (2004d), p. 2.

² U.S. Joint Forces Command and U.S. Army TRADOC (2003), p. 7.

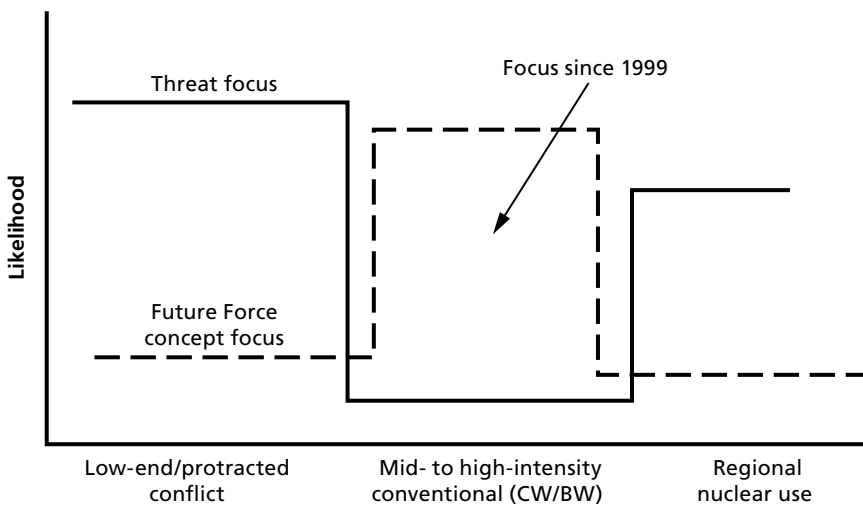
³ Indeed, Red's theater-wide strategy in Nair had every expectation of defeating Blue's conventional capability over time, provided Blue was denied a quick victory. Red's preemptive attack and employment of WMD in UQ 03 were intended to deny Blue a rapid victory.

tactical and operational fight in the future could be much different than currently envisioned.”⁴

At the nuclear end of the spectrum of conflict, UQ 03 participants realized that future adversaries might resort to nuclear weapons to compensate for their conventional inferiority. Ironically, the need to counter the speed and violence of future U.S. military concepts might result in a situation where “the threshold for first use [of WMD] by regional actors is potentially much lower than we have previously thought.”⁵

The first Future Warfare Seminar examined this issue of conceptual discontinuities between U.S. forces and potential adversaries and developed the graphic in Figure 2.1.

Figure 2.1
The Adaptive Threat and Concept Development



RAND MG391-2.1

⁴ U.S. Joint Forces Command and U.S. Army TRADOC (2003), p. 8.

⁵ U.S. Joint Forces Command and U.S. Army TRADOC (2003), p. 8. The report also noted that “Further complicating the situation is the fact that current military staffs generally do not have nuclear weapons experience; they have not dealt with them.”

Figure 2.1 depicts the notion that U.S. military forces have focused their efforts on developing concepts that address the mid- to high-intensity realm of the conflict spectrum. This is a continuation of the overwhelming conventional superiority the U.S. military achieved during the post-Cold War era, which it demonstrated so decisively in Operation Desert Storm and during the opening phases of Operation Enduring Freedom and Operation Iraqi Freedom, although this conventional superiority has yet to be tested against a competent opponent. During UQ 03, as well as during the “post-conflict” phases of ongoing operations in Afghanistan and Iraq, it became clear that the successful execution of major combat operations—which overwhelming U.S. conventional capability almost guarantees—does not necessarily result in conflict termination. This observation leads to the conclusion that concepts explored in wargames focused primarily on mid- to high-intensity conventional combat operations lack the fidelity to be suitable for dealing with operations on the opposite ends of the spectrum. In short, these potentially difficult operations are not lesser-included cases of what is supposed to be a full-spectrum force. Furthermore, as UQ 04 demonstrated, operations across the spectrum of conflict will likely be occurring simultaneously in future wars.

The second Future Warfare Seminar and the Operations Workshop continued to flesh out the discontinuities between the likely threat and the capabilities and conceptual focus of U.S. forces. Additionally, these events began to raise questions about the applicability of emerging Joint Operations Concepts for the conflict environments encountered in UQ 03, which were extended into UQ 04. The lower end of the conflict spectrum, however, received more attention than the nuclear end. During the pre-UQ 04 events, RAND observed that U.S. military theory concerning low-end, protracted conflict is still rooted in the counterinsurgency doctrines that emerged during the Vietnam era and that have received scant attention since. Consequently, there appears to be a need for rigorously revisiting this realm of conflict and perhaps developing a new, more expansive theory of conflict and a supporting operational doctrine. The focus should be

on countering adversaries who do not operate according to what we consider an orthodox pattern.

We note that a future seminar and/or exercises that deal with the full implications of preparing for regional nuclear combat operations is worth consideration by the Future Warfare Division.

The Limitations of Existing Definitions, Doctrine, and Theory

In both the Nair and Sumesia theaters, UQ 03 depicted Blue forces preparing to transition from major combat to stability operations, which would entail significant counterinsurgency requirements. In the Nair theater, the conditions for this transition simply did not exist—Red retained significant conventional military and paramilitary capabilities, which it planned to use in conventional counteroffensives against Blue when conditions permitted. Existing doctrine, as outlined in FM 3-0, *Operations*; FM 3-07, *Stability Operations and Support Operations*; and FM 90-8, *Counterinsurgency Operations*, are perhaps inadequate to deal with the strategic and operational environments in Nair and Sumesia. In Nair, in particular, U.S. doctrine was largely irrelevant for the conditions in which the coalition found itself. Concepts for major combat operations were not effective against the Red conventional force, which had dispersed but still retained the capability to resume major combat operations. Stability and support and counterinsurgency doctrine was not appropriate to combat an enemy who still maintained political control of its state and legitimacy in the eyes of the people of Nair.

Current counterinsurgency doctrine operates from the fundamental assumption that the United States will be engaged in a campaign to support a constituted government against some form of insurgency. As defined in FM 3-07, “An *insurgency* is an organized movement aimed at the overthrow of a constituted government through the use of subversion and armed conflict.” A *counterinsurgency* “is those military, paramilitary, political, economic, psychological, and civic actions taken by a government to defeat an insurgency.”

According to FM 3-07, victory in a counterinsurgency conflict

[G]oes to the party that achieves the greater popular support. The winner will be the party that better forms the issues, mobilizes groups and forces around them, and develops programs that solve problems of relative deprivation. This requires political, social, and economic development. Security operations by military and police forces, combined with effective and legitimate administration of justice, provide the necessary secure environment in which development can occur.⁶

In short, the issue is about securing popular support for the government the United States is supporting, thereby ensuring its legitimacy and eventual stability and security.

In UQ 03 and UQ 04, these traditional definitions and doctrine were perhaps appropriate to the campaign in Sumesia. In Nair, however, they were inadequate. Blue forces did not enter Nair to assist a legitimate regime. Quite the contrary: Blue forces went to war in Nair to end the threat of WMD possessed by the Nairian government. It was a preventive war, a war in which the legitimate government of a sovereign state was overthrown because its existence was inimical to U.S. and coalition interests. Thus, Blue's plans for dealing with the post-MCO phase of the campaign would face a stability operations environment that current doctrine does not address. We examine this issue when we discuss insights from UQ 04.

The old adage "one man's terrorist is another man's freedom fighter" is worth considering as the U.S. military continues to develop concepts that must encompass a wide variety of potential adversaries. These could very well range from traditional insurgents to partisans contesting a U.S. preemptive invasion and occupation. Indeed, in Nair, Blue faced a complex adversary consisting of deliberately integrated regular and paramilitary forces, including regular army and revolutionary guards, special operations forces (SOF), territorial security forces, and militia. Finally, the question of nonstate actors involved in attacks on "the West"—for want of a better term—will

⁶ Headquarters, Department of the Army (2003), pp. 3-3, 3-4.

likely require a new theory of conflict that focuses on the ideas of those particular actors, rather than assuming that existing theories and concepts remain fully relevant.

RAND Insights from UQ 04

RAND data collection and analytical efforts focused on capturing broad issues and insights at the strategic and operational levels in the following areas:

- Assess the implications of the central study question (“Identify the concepts and capabilities required to counteract an adversary who, having lost most of his conventional capability, seeks decision through a combination of protracted, unconventional operations and WMD employment”) and the related analysis question (“How does the joint force conduct and sustain simultaneous distributed maneuver in a non-contiguous battlespace?”).
- Assess the four objectives centered on concepts for major combat operations, transition to post conflict, stability operations, and network-enabled battle command.
- Assess the study issues grouped into the five areas of battlespace awareness, joint C2, force application, force protection, and focused logistics.

These areas of analysis were also viewed from the perspective of providing input in two other areas:

- Joint interdependencies
 - Joint force protection
 - Joint logistics
 - Joint battle command
 - Joint fires and effects
 - Joint air and missile defense

- Joint concepts
 - Major combat operations
 - Stability operations
 - Urban operations
 - Seabasing
 - Multinational and interagency
 - Joint Forces Support Component Command.

The remainder of this chapter will provide RAND's insights, as appropriate, into the various areas of analysis noted above. We first assess the five broad study issue areas for each theater because the implications of the associated study issues inform an assessment of the other areas of analysis.

General Assessment of Study Issues in the Context of the Sumesia Theater

Joint Command and Control. The principal issues in this area centered on synchronization and command and control of forces in dispersed, non-contiguous operations. Synchronization in the Sumesia scenario involved solving the challenge of how joint, interagency, and multinational forces synchronize their objectives, their efforts to achieve these objectives, and their forces (fire and maneuver) in non-contiguous operations. Command and control challenges were inherent in Blue's having to conduct distributed, non-contiguous operations in five areas of responsibility (AORs) within a very large country.

The approach taken to mitigate the C2 problem caused by dispersion was to use the country's internal boundaries as operating boundaries for coalition forces and to coordinate coalition activities by establishing a Sumesia Coordination Council for that purpose. Other important issues discussed in this context had to do with the form that C2 arrangements might take in signifying a transition from coalition to indigenous/local government control. These were largely reporting issues involving when command of the Combined Joint Task Force (CJTF) should shift from "being supported" to "supporting." One interesting definition of the desired end-state was the

following: It has been achieved when CJTF hands the command of all forces in Sumesia back to CJFSOCC (Combined Joint Force Special Operations Component Commander, i.e., the SOF commander), which was where command resided before the conflict escalated six months earlier.

The approach taken by the Blue Sumesia team to the synchronization of all Blue efforts was made very clear from the outset of UQ 04 by its statement of its objectives and the end-state it sought to achieve. The desired end-state was a Sumesia in which the need for coalition forces progressively lessened until it was ultimately removed. The goal was to hand back to the government of Sumesia, which was still intact but not in control of a significant part of the country, the care and feeding of all of its people—to make the conflict in Sumesia into a war for Sumesia by Sumesia. Sumesia was not a completely failed state. Rather, it had a powerful breakaway insurgency that controlled an important region of the country both politically and physically. The insurgency needed to be defeated and replaced by a relegitimized Sumesian government that showed it could meet basic human needs.

The clear statement of this objective and desired end-state at the outset helped guide the Blue Sumesian team throughout its subsequent deliberations. Early on, the team realized that defeat of enemy forces in the field, while primary in terms of force planning efforts, was not the main objective. Team members focused heavily on the longer-term objective of restoring Sumesian government control even as they planned their military operations. Thus, they paid attention to the use of coalition military assets for humanitarian assistance operations as a matter of priority but also searched for ways to avoid creating the expectation that coalition military forces could provide for all the Sumesian people's needs. Guided by their overarching objective, the team looked for ways to get the Sumesian government involved in humanitarian assistance efforts—to demonstrate that local people can do the job themselves with the help of their own government.

When the insurgents in northern Sumatra used chemical attacks to terrorize the population, the Blue Sumesian team decided that it had to respond aggressively to these attacks—not because they were

hurting coalition military efforts but because they had to show the population that the attacks were being dealt with. Hence, information operations and other campaign moves were planned to counter the effects of the chemical attacks and to reassure the indigenous population that the government of Sumesia, as well as the coalition, was operating on its behalf. The team worried a lot about how to get nongovernmental organizations and other assistance groups—which had left the conflict-ridden areas but not Sumesia—back to work in these areas.

The big insight to be gained here, it would seem, is that the Blue Sumesia team's early specification of the desired end-state enabled it to focus, define, and deal effectively with problems of transition from major combat operations to stability operations. In practice, however, the team dealt simultaneously with both major combat operations and stability operations from the outset. The clarity of purpose in the team leader/coalition commander's initial statement of the overriding objective—transition to civilian control under the government of Sumesia as soon as feasible—made it possible for this team to plan efficiently and effectively.

Transition was integral to the plan, but it was less a single event, which was supposed to occur at a specific moment in the campaign, than a persistent objective, which could be achieved repeatedly in the course of the campaign. The team kept asking itself when the time would be ripe for transitioning to Sumesian government control. The answer varied, depending on progress in the campaign and the residual strength of the insurgency, but transition as the overarching objective—to be achieved as soon as possible wherever possible—stayed constant. The question was never what to do in the end or in general, but rather how and when to do specific things along the way.

Battlespace Awareness Issues. These issues centered on information requirements—in particular, how the joint force reacts to unexpected situations and identifies, assesses, and mitigates risks associated with lack of information.

In the Sumesian scenario, information sharing with country teams and coalition forces was highly convoluted. Separate networks for information sharing and fusion had to be established in every case.

In 2016, satellite coverage will be robust, but information sharing will probably not be, because solutions to the problem of exchanging data across the various institutional and organizational stovepipes that exist today seem less likely to be forthcoming. Technology for data collection may improve, but management systems for dealing with it may not keep pace. The operative result in this exercise was the Blue Team's total surprise at the Red Team's unexpected counteroffensive in areas Blue thought were secure during the military campaign in Sumatra, which was supposed to deliver a knockout blow to the insurgency there. The Red counterattack revealed a serious misapprehension—a lack of battlefield awareness—by Blue of what the adversary in Sumesia still had available to wage war.

As in Vietnam during the Tet Offensive, Sumesia's insurgents launched a variety of asymmetric, coordinated attacks over a wide area. These attacks were impressive, not least because they implied that Red's intelligence, surveillance, reconnaissance, and communications capabilities were very good and that Blue's battlespace awareness was sorely lacking. Blue had missed indicators that Red possessed substantial residual capabilities, even after having suffered serious losses earlier in the campaign.

Blue responded to the counteroffensive in a timely and effective fashion by making operational moves to regain lost ground and by launching information operations to turn the populace against the insurgents. Blue moved quickly to take back the operational initiative from Red and to reassure the population of Sumesia that the coalition and, ultimately, the government would be able to protect it. However, in the wake of Blue's misreading of the situation in the first instance, its risk-mitigation options were limited. Greater reliance on SOF, which were already carrying much of the counterinsurgency burden with some success, appeared to be an immediate recourse. Another was reliance on the intelligence assets of coalition partners that had a greater depth of experience in the region—for example, allies like Australia in the case of Sumesia and indigenous (even if troubled) partners like the government of Sumesia itself.

The high-level issues are how to satisfy the need for battlespace awareness when confronting an adversary that does not conform to

orthodox patterns and how to communicate the existing state of awareness to everyone needing to know. In this case, the information required was harder to get because the adversary chose to operate in a way deliberately designed to avoid orthodox patterns. Sharing the available information via secure communications raises troublesome issues, because so many diverse yet deserving groups can legitimately lay claim to it. Nevertheless, to effectively fight a combined campaign against an opponent that operates unconventionally, sensitive information must be widely shared. For U.S. forces, this means sharing such information with allies and partners as well as other Services and agencies. The problem is the terms, conditions, and means by which wider information sharing—a “must,” for battlespace awareness to improve—can be accomplished.

Force Application Issues. These issues cluster around how joint forces (and presumably coalition forces as well) conduct shaping operations, achieve joint effects, engage in and sustain simultaneous distributed maneuver in a non-contiguous battlespace, execute major combat and stability operations in transition or simultaneously, and operate in urban terrain.

The Blue Force coalition in Sumesia found itself overextended operationally and logistically, conducting distributed, non-contiguous operations in five AORs within a very large country. Again, the approach taken by Blue to mitigate this problem was to use the country’s internal boundaries as operating boundaries for coalition forces and to coordinate coalition activities by establishing a Sumesia Coordination Council for that purpose. When dealing with major combat operations in Sumesia, such arrangements seemed appropriate and sufficient for the tasks at hand. No major force application “issues” emerged. The Blue team simply planned and executed smoothly what appeared to be successful military operations that confined the threat to northern Sumatra (Military District I) and drove it either underground or into the countryside, as well as into insurgency.

Trouble started with the last turn of the game, when the insurgents struck back across a broad, non-contiguous front. Problems of transition from major combat operations to stability and support operations suddenly became acute. The Blue team had been debating

transitional issues from a relatively relaxed, almost theoretical perspective—i.e., they thought the initiative was theirs to take, and that they could shape the future at will if they could only figure out how. When the insurgents struck back unconventionally and in force during the last game turn, temporarily reversing previous Blue gains and inflicting new losses (including a new humanitarian crisis involving 10,000 displaced persons), Blue was faced with problems it had not expected. Instead of transitioning from major combat operations to relatively straightforward stability and security operations, which it could hand off as soon as possible to the Sumesian government, Blue now faced a major insurgency requiring the application of additional force by the full coalition. In short, Blue was confronted with a much longer, more problematical security situation that precluded the expected transition to post-conflict operations. The key point here, and in Nair as well, is this: Unless destroyed outright, the enemy, not we, decides when conflict ends and transition begins.

The big issue in this context is how, when, and where to apply force against an insurgency that has faded from a once-prominent conventional threat into a degraded but persistent asymmetric threat drawing strength from a rural base in the countryside. Also, what is the proper force mix to apply against such a threat? In an insurgency, classic Red and Blue force considerations are not sufficient to address the problem. If the eventual departure of the coalition is an objective, popular support and how to get and maintain it must be considered as well. This suggests that unconventional forces and means, like SOF and information operations (IO), will have to play more prominent roles if insurgencies are to be defeated. It remains open, however, what roles conventional forces should play in battling insurgencies and what the proper mix of joint and combined forces ought to be. One place to start looking for answers may be among coalition forces, especially those (like the Australians in Sumesia) that bring with them greater depth of experience in the region than U.S. joint forces may have.

A further issue is the need to begin planning early on for the possibility that stability operations may include an insurgency, or to be prepared to stifle an insurgency that one's operations might en-

gender. As noted elsewhere in this report, such planning should be part of an overall campaign plan that is focused on adapting to conditions and achieving the desired end-state. Stability operations planning, in other words, should proceed apace (simultaneously, not sequentially) with planning for major combat operations as part of the overall campaign plan. From the outset of conventional force operations, coalition and joint forces could seek to prevent insurgencies from emerging, and they could dedicate specific forces to that task. SOF (and other forces) already contribute in this regard, often before operations commence. Different SOF (and other forces), combined as well as joint, could likewise be called upon to conduct counterinsurgency operations in preparation for hostilities and continue them throughout the conflict. Furthermore, issues of presence, force-to-space density, population control, and rules of engagement also must be addressed adequately in the campaign plan. The purpose is to design the campaign, to the extent possible, in greater depth to deal with potential challenges across the range of military operations. Thus, any transition between conventional warfare and counterinsurgency would be much less pronounced than it seems to have been in the Sumesian case.

Focused Logistics Issues. These issues focused on seabasing and how it might affect deployment, employment, and sustainment of joint forces in the Sumesian campaign.

Sumesia is a logistician's nightmare because it involves a variety of coalition forces operating in jungle terrain. Ground lines of communication (LOCs) are long and vulnerable. The insurgents in Sumesia regularly interdicted them, seeking to undermine the coalition by attacking its logistics support. Seabasing appeared to provide a promising alternative, especially as a way of dealing with resupply issues made more difficult by the insurgents' targeting of ground LOCs. By storing supplies at sea and using robust airlift and sealift to bring them ashore, the coalition could reduce its logistics footprint on land while securing the supplies afloat by leveraging naval assets for force protection. Potentially, seabasing could also provide secure platforms for the initial deployment and subsequent maneuvering of coalition forces as well as for the treatment of casualties. The problem of

medical attention, in particular, seemed to lend itself to a seabased solution in this water-rich theater.

As evidenced by the Sumesia scenario, however, there are limits to the seabasing concept. In the first place, seabasing requires freedom of navigation, but that was not always available off Sumesia. The insurgents interdicted sea LOCs with mines and sank sustainment ships with submarines and other vessels. Seabases, in other words, are not totally secure. Furthermore, there are not enough of them to go around since, like ISR assets, they are costly. Hence, there is a need to prioritize among seabasing assets. They could not handle the full load of deploying and maneuvering forces in Sumesia, nor could everything on them move by air to land. Even resupply had limits in seabasing. Nongovernmental organizations could not use seabases to resupply their humanitarian assistance efforts, even though they supported coalition objectives.

Secure land bases and sea ports will still be required to handle the throughput of coalition logistics and other (e.g., deployment, maneuver) operations. But seabasing makes it possible to reduce the logistics footprint on land. Like a good portfolio strategy for the stock market, seabasing hedges a joint/coalition force's bets by distributing them across a variety of options. Loss of one asset, therefore, does not trigger catastrophic failure.

An important issue in focused logistics, as it relates to Sumesia, is how much seabasing is enough to balance the Blue force's risk and improve the overall security of its LOCs for deployment, maneuver, and resupply. Seabasing is not a silver bullet; rather, it is a promising option subject to trade-offs between and among other basing options. For example, how much do seabases promise, compared with various ground-basing options? According to what parameters—e.g., force protection, operational distances, storage capacity, cost—should the comparisons be made? What measures of effectiveness should be employed to determine appropriate values for the parameters and, ultimately, for the options? Which mix of options best hedges against future uncertainty?

Force Protection Issues. For Sumesia, these issues centered on LOC control and protection during operations. Theater air and missile defenses were also involved, as was the U.S. Navy's Sea Shield.

After the conflict in Sumesia shifted from conventional warfare to unconventional insurgency, Red focused on Blue's logistics and its LOCs as a key vulnerability, and it started to attack them as a matter of priority. Thus, securing its LOCs became the focus of Blue's force protection efforts as well. Elsewhere, Blue appeared to provide fairly seamless theater air and missile defense protection for its forces. Red ground-based passive air-defense systems (guns and Man Portable Air Defense Systems [MANPADS]), however, proved a challenge to low-altitude Blue air operations, as such systems do today. Considerable numbers of coalition forces had to be dedicated to protecting Blue's extensive ground and riverine LOCs. Blue had no choice but to keep roads open, bridges repaired, transports protected, and rivers navigable—for its own forces, for humanitarian and other relief convoys, and for the local population that Blue was trying to win over.

The key force protection issue involves the size of the total force that joint and coalition partners need to plan on fielding in cases like Sumesia's. When a conventional conflict turns into an insurgency, as in this case, protection of interior LOCs can be placed in jeopardy. Sufficient forces have to be dedicated to removing such risks, and the number of those forces can be considerable when long LOCs and expansive operational areas are involved. But it is a price that must be paid, even if seabasing can reduce that price somewhat. Furthermore, that price can be lowered by planning for the operation with the possibility of a transition to stability operations (including counter-insurgency operations) in mind. Forces dedicated to deterring insurgencies, if deployed simultaneously with the onset of a conventional war (not sequentially—i.e., later) can help reduce the potential threat of postwar insurgency. If that threat can be lessened through anticipatory planning, a smaller number of troops should be needed to protect against the threat. If deterrence fails, however, contingency planning should account for that possibility in advance, and additional troops should be earmarked for deployment to help protect the

total force (including supporting elements, civilian as well as military).

General Assessment of Study Issues in the Context of the Nairian Theater

Joint Command and Control. The C2 issues involved in conducting coalition operations, urban operations, and logistics support for a theater that had six widely dispersed lines of operation were the subject of numerous player discussions. Nevertheless, UQ 04 did not have sufficient resolution, certainly for the Blue strategic/operational group, to explore these C2 issues at other than a subjective, nontechnical level. The technical issues are not trivial, and the C2 insights from the game should serve as the basis for more in-depth post-game analyses. Nevertheless, C2 never had a major impact on game play. It was assumed that most of the real-world technical issues associated with joint C2 could be resolved. No issue in this domain became problematic for the Blue strategic/operational group. Furthermore, the strategic objectives of defeating the Nairian government, eliminating its nuclear weapons arsenal, and setting up a viable replacement were well understood by the Blue cell's command leadership.

Battlespace Awareness. Blue's experience with Nair highlighted several major problems with the concept of network-centric warfare, particularly in gaining Blue battlefield knowledge dominance.⁷ First, it became apparent that much of the focus of Blue's intelligence collection cell was on the allocation of surveillance assets to support the six lines of advance into Nair. Thus, there was an inordinate concentration on the collection and data transmission phases of the intelligence cycle. It is noteworthy that there was little game play involving, or appreciative of, the most serious roadblock—the diffi-

⁷ The Department of Defense Web site provides the following definition for network-centric warfare: "Network-centric warfare is an emerging theory of war in the Information Age. It is also a concept that, at the highest level, constitutes the military's response to the Information Age. The term network-centric warfare broadly describes the combination of strategies, emerging tactics, techniques and procedures, and organizations that a fully or even a partially networked force can employ to create a decisive warfighting advantage" (Department of Defense Office of Force Transformation at <http://www.oft.osd.mil>, accessed 1 March 2005).

culty of turning the terabits of data into usable information. Although the issue was brought up, the intelligence cell did not appear to focus on it or let Blue's command leadership know that it might be a major problem. This is a major, real-world, emerging crisis within the intelligence community. The intelligence cell did freely acknowledge, however, that once Blue's wide array of sensors was supporting widely dispersed and diverse operations, its capability was seriously inadequate, given the circa 2016 suite of surveillance systems. In short, in an immense, dispersed theater, where there was much to see, the intelligence resources were not sufficient to the task.

To compensate for the inadequacies of standoff surveillance, the intelligence cell deployed a robust array of human intelligence assets, specifically special operations units. The issue of scale and coverage by these units was acknowledged as a serious challenge, especially during the evolving siege of Nair's capital, Rethan.

Force Application. One of the most important insights that emerged from Blue's exercise experience was that there are few, if any, credible "combat" measures of effectiveness for counterinsurgency, urban combat, or stabilization operations. How to determine whether one was winning or losing remained an unanswered qualitative or quantitative question. Aside from body count, or other largely meaningless metrics from the Vietnam era, the analytical community faces a major challenge in developing viable measures of effectiveness in these areas. Any operationally relevant measures of effectiveness must address the question: What military condition must be produced to achieve the desired strategic end-state?

Focused Logistics. Well into the scenario, Blue's logistics cells warned that the support system for Blue's six lines of advance into Nair was seriously overstretched. This was acknowledged in the Senior Leader Seminar (SLS) that followed UQ 04 as an emerging insight: "We could not sustain the desired tempo of operations. Operating six distributed Joint Task Forces revealed issues of force to space [sufficient boots on the ground], scale, and increasing force ef-

fectiveness through joint interdependencies.”⁸ A key vulnerability for the theater logistic system was the presence in Nair of long multiple land LOCs that were constantly subjected to interdiction. One tactical commander of a line of advance acknowledged that 50 percent of his combat forces were tied up in LOC security operations. It is not surprising that there is interest in the Joint Precision Air Drop System (JPADS) technology as a partial answer to this problem. Several of the logistics players believed that the use of widebody airlifters using precision airdrop systems from medium altitude warranted further consideration.⁹

One aspect of UQ 04 that was underplayed was the size and consequence of managing large numbers of refugees and enemy prisoners of war. If played more accurately, requirements to deal with these populations would probably have significantly increased troop and logistical requirements and placed further demands on the LOCs.

Force Protection. As noted above, force protection for the LOCs supporting six lines of advance was a major challenge that consumed a significant portion of the combat power of each line of advance. UQ 04 ended before there was a decision to conduct an all-out assault on Rethan. Several participants in the Blue cell acknowledged that such a fight would consume substantial resources, especially combat units that would, most likely, have to be taken away from some the other lines of advance.

Assessment of Selected Study Issues

Several of the study issues or their associated EEAs bear commenting on based on observations during UQ 04.¹⁰

⁸ U.S. Army TRADOC (2004b).

⁹ RAND is in the process of performing an assessment of the feasibility of using JPADS to support the northern Blue task force in the UQ 04 scenario. If this method of precision aerial delivery proves cost-effective, it has the potential of providing partial relief to the ground LOC security problem during a theater-wide campaign.

¹⁰ The UQ 04 Study Issues and Essential Elements of Analysis are listed in Appendix A.

BA.2.1. *How does the joint force gain and maintain situational awareness?* Situational awareness includes knowledge of friendly, enemy and neutral entities as well as an appreciation of terrain.

The ability to gain and maintain situational awareness was of concern in both theaters. In Nair, the issue was particularly acute in Rethan, but gaining adequate situational awareness was also a challenge along the long LOCs in the various task force areas of operation. The ability to gain and maintain adequate situational awareness was influenced principally by four factors: the expansiveness of the two theaters, envisioned technical capabilities, complex terrain, and Red's actions to conceal and camouflage its activities.

The ability of future force units to establish and maintain a network that will provide situational awareness at the individual platform level will present significant technical challenges. This situational awareness becomes an issue not only of tactical advantage but also of survivability, as the Army begins to transition to less heavily armored vehicles with the Future Force Future Combat System (FCS). Among Future Force units equipped with less-survivable platforms operating in a non-contiguous battlespace, e.g., combat support (CS) and combat service support (CSS) units, high-quality situational awareness will be critical. A discussion during deliberations in the Nair tactical panel (Case B) shed some light on this issue.

Initially, the assumption prevailed that Blue would always have situational awareness. A robust network, ubiquitous Army and other Service unmanned aerial vehicles (UAVs), special operations forces, and other resources would provide an extraordinarily high level of awareness. When the discussion turned to what the technical enablers of this situational awareness would be in 2015, however, this assumption became less certain. Questions arose about the ability of line-of-sight digital systems (which will likely still be on many Army platforms in 2016) to perform without significant degradation over extended distances and in complex terrain. This issue, while not necessarily as problematic in the combat forces, was more acute in the CS and CSS units that were supporting combat forces and operating across extended and frequently contested LOCs. These units were

responsible for their own security and for combat operations in an extended battlespace. UQ 04 demonstrated that CS and CSS units will likely require high levels of situational awareness and connectivity beyond what has traditionally been required by such units in the past.¹¹ The situation in the game raised questions among many participants that support units would need augmentation by combat forces, or their ability to perform their support missions would be highly degraded. In short, logistical security is not discretionary—like any other aspect of a campaign, it requires both deliberate planning and the commitment of combat resources.

The U.S. Air Force representative reported that his Service would employ literally thousands of UAVs as part of its contribution to providing situational awareness—and strike—in Rethan. Many of these systems would be autonomous. Such UAVs, thrown into the ISR mix with the UAVs the Future Force intends to field, will create a significant challenge for airspace management and will necessitate sophisticated friend-or-foe systems to preclude fratricide. Finally, given the assertion that these thousands of UAVs will be fully fielded and operational in 12 years, there should already be a significant wedge in the Air Force budget for their development and fielding. If there is not, then the availability of this resource is at least open to question.

We have already alluded to the challenge of complex terrain. Suffice it to say that the ability of the Future Force and joint networks to operate at anticipated levels of effectiveness in cities, jungles, and across extended distances with the awareness levels required by Future Force and joint concepts is worthy of investigation. Again, both the Sumesia and Nair scenarios offered ample instances of the challenges involved. In light of these challenges, perhaps an additional EEA should be added to the Battlespace Awareness study issue:

¹¹ Although C4ISR relay technologies (UAVs, aerostats, aircraft, etc.) may alleviate connectivity and bandwidth issues, concepts for the Future Force must include CS and CSS units as part of the requirement. Again, this is because of the demands placed upon these units in securing extended LOCs and confronting insurgents as a routine part of their operations during UQ 04.

“What systems will be fielded in 2016 to enable the joint force to gain and maintain situational awareness? How will they be integrated across the joint force? and What are their limitations?” Answering these questions would ground joint and Future Force concepts in evolving technical realities and give JFCOM and the Army a clearer sense of actual capabilities—and limitations—as concepts continue to mature. Such an assessment would also better inform decisions about how much future Army forces can reasonably rely on battlespace information in lieu of robustness and platform survivability.

C2.1. How do joint, interagency, and multinational forces synchronize objectives to achieve end-state in major combat and stability operations? This question examines the coordination of campaign objectives to realize end-state (as opposed to the accomplishment of individual objectives).

Perhaps the most important discussion during UQ 04 concerned the segmented JFCOM-led approach to developing Joint Operations Concepts. The result is a concept for major combat operations followed, after a transition, by stability operations. This issue was also brought up during the SLS: “During both campaigns [Nair and Sumesia], seeking distinct transition from major combat operations to stability operations hindered attainment of strategic aims.” Much of the problem with such an approach is that it “[s]egments war into major combat operations and stability operations rather than describing the complexity and coherence of their simultaneous execution.” As a consequence, the approach “[c]reates false expectations for media, civilian leadership, coalition partners and allies” and “[c]reates an exploitable vulnerability for Red’s use of asymmetric warfare.” In short, “Current approach to joint concepts might be out of balance,” and what is needed is “an overarching, cohesive description of campaigning that includes major combat opera-

tions and stability operations within the context of operational art—Joint Operations Concepts Version 2.0.”¹²

The challenges to drafting coherent Joint Operations Concepts transcend mere methodology. The “bucket chart” shown in Figure 2.1 is instructive in this regard. The cultural and doctrinal assumptions embedded in this simple graphic are telling. In essence, the graphic shows that the conceptual development efforts by the Army (and JFCOM and the other Services) have been heavily focused on the mid- to high-intensity section of the spectrum of conflict. Even though there is growing awareness that this part of the spectrum is not the most likely case, there has been continued adherence to the notion that this is the most difficult case and that operations on the lower end of the spectrum are largely lesser-included cases for a force able to operate with exceptional competence “in the middle.” Concepts for operating at the upper (nuclear) end of the spectrum, which were robust during the Cold War era, also need to be addressed given the reality of nuclear-armed regional powers now and in the future. This is not to say that the middle part of the chart is not important. Indeed, as UQ 04 demonstrated, future conflict will likely not be segmented and future operational concepts will require coherence across the range of military operations.

The complexities of the environment that Blue forces encountered in UQ 04 challenged the notion that a force designed largely for major combat operations can be equally adept at stability operations with only a modest amount of task organization. This point was brought out somewhat obliquely during the SLS, in the section on “Operational Art,” in which the observation was made that “[u]nconventional warfare frustrates conventional thinking.”¹³ Yet, conventional thinking, albeit very sophisticated conventional thinking, seems to be driving concept development. Consequently, concepts and capabilities for major combat operations take center stage because of the implicit assumption that if one can field forces that can

¹² U.S. Army TRADOC (2004b).

¹³ U.S. Army TRADOC (2004b).

rapidly defeat the enemy's combat forces, stability operations will remain a lesser-included case for that force. Given the difficulties encountered in both theaters in UQ 04, that assumption should be revisited.

C2.1.1. *How does the joint force articulate end-states for major combat and stability operations?* “End-state” is a statement of the conditions that, when achieved, accomplish the mission. It may also state what the force must do with respect to the enemy and the terrain in order to achieve the desired end-state.

One of the clear shortcomings of UQ 04 and its pre-game preparatory events was the absence of robust interagency and coalition nonmilitary representation. Thus, military players, by default, had to grapple with defining “end-states” and other largely political objectives that were, in fact, the political decisions they would have to attempt to achieve. These shortcomings resulted from the challenge of getting broad interagency participation in UQ 04 activities by the appropriate individuals from across the U.S. government (and other agencies, e.g., nongovernmental organizations). We discuss this issue in greater detail in Chapter Three.

FA.1. *How does the joint force conduct continuous shaping operations in support of multiple distributed maneuver?* How does the joint force seek to create favorable conditions for operations by using available capabilities? Specifically, what types of operations (information, security, etc.) are employed to set conditions for decisive combat?

The language implicit in such terms as “shaping operations,” “create favorable conditions,” and “decisive combat” in this study issue are indicative of a fundamental problem inherent in joint and Army doctrinal concepts—a problem that is also reflected in other terms of military art, e.g., “intelligence preparation of the battlefield.” At best, these terms reflect a doctrinal approach to warfare that assumes (1) the dynamics of the battlefield and the unpredictability of the enemy are subject to control, and (2) uncertainty can be reduced

to manageable levels. At worst, these terms signal a doctrinal rigidity whose underlying assumption is that the U.S. joint force can somehow make the conflict environment adapt to itself, rather than vice versa. This is somewhat ironic, particularly when the descriptions of future adversaries often tout a highly adaptive opponent that will embrace asymmetric strategies to confound our military superiority. Additionally, such language implies that U.S. doctrine is universally applicable rather than requiring case differentiation. The Blue information operations campaign undertaken in response to the insurgency is a good example of the problems such an approach posed in UQ 04.

In Sumesia and Nair, the IO campaign, by its nature largely a shaping operation, focused on the doctrinal notion of separating the insurgents from the people. In Sumesia, this was a viable approach, because the insurgency there was largely in accordance with the Army's doctrinal precepts. In Nair, however, the underlying assumptions of the campaign bumped up against the hard reality that Red resistance forces were generally regarded by the Nairian population not as insurgents but as national forces resisting a Blue invasion.

Despite this reality on the battlefield, Blue crafted an information operations campaign that assumed "the people" could be convinced to abandon "the insurgents." Furthermore, Blue installed a new regime in a city that was not the capital, and one component of the IO campaign focused on convincing the Nairian people of its legitimacy. In the eyes of the Nairian people, however, the legitimacy of the government Blue installed by force of arms was anything but assured.

Thus, the fundamental assumptions underpinning Blue's IO campaign in Nair were not necessarily relevant to the situation on the ground. In the complex new security environment, which is reasonably well described in the *Joint Operational Environment* document (U.S. Army TRADOC, 2003), it would appear that joint and Service doctrines will require greater situational differentiation. In short, U.S. forces may well have to adapt to and shape the environments in which they find themselves.

FA.2.2. *How are forces task organized as operations transition between major combat and stability operations?* Combat, combat support, and combat service support capabilities are task organized to allow the joint force to be able to shift gracefully from mission to mission. Does task organization (e.g., mix of light/heavy, multi-Service or multinational forces) cause logistical demands that decrease force effectiveness?

UQ 04 raised several points about the transition between major combat and stability operations. As already noted, the SLS highlighted the fact that there probably will not be a linear transition between major combat and stability operations. Instead, operations will likely ebb and flow along the spectrum of conflict. Joint and Service operational concepts need to account for this reality.

Both theaters, however, demonstrated another problem with the sequential nature of the Joint Operations Concepts being gamed. In UQ 03, Blue forces—particularly in Nair—deployed in accordance with a concept for major combat operations that attempted to present the enemy with multiple dilemmas. On the ground in Nair, this approach resulted in six dispersed lines of operation to force an early military decision. In UQ 04, the multiple lines of operations—believed to be advantageous in the campaign planning that resulted in UQ 03 operations—turned out to be problematic. There was no clear end to combat, and the difficulties involved in supporting multiple lines of communication in an expansive theater were too challenging. Different task forces in Nair faced different tactical situations in UQ 04, but none had reached the clear end of major combat operations. Red combat forces remained in the field, and the conflict environment resembled combat operations more than stability operations in many areas of operations. Therefore, it was impossible to meet the objective of ensuring that “Combat, combat support and combat service support capabilities are task organized to allow the joint force to be able to shift gracefully from mission [major combat operations] to mission [stability operations]” as required by this EEA. Quite simply, the Blue force faced a dynamic situation that militated

against anything resembling a smooth transition between major combat and stability operations.

Complicating the operational environment was the geographic context in both Sumesia and Nair. The tyranny of distance made any decision to shift forces a momentous one. Task organizing between the widely dispersed forces in either theater—whose positioning in UQ 03 was designed for a campaign plan that erroneously envisioned the rapid collapse of Red when confronted by the “multiple dilemmas” of six Blue lines of operation—would take days, if not longer. As the SLS noted, “Scale radically increases both the duration and the difficulty associated with repositioning of major forces.”¹⁴ Insecure lines of communication only complicate matters. Again, the key point—clearly understood by participants in the game and in the SLS—is that joint and Service concepts need to focus on the totality of a campaign rather than approaching war as a series of sequential operations, e.g., major combat operations followed by stability operations. This is not to say that a campaign will not have phases. Most campaigns on the scale of Nair will require phasing to account for the strategic and operational realities of the theater.¹⁵

FA.5. *What are the capabilities required to conduct joint urban operations?* Operations in urban terrain will include combat and stability operations that are complicated by complex terrain, the presence of noncombatants, greater threats to lines of communications and rules of engagement.

The issue of joint urban operations proved particularly problematic in UQ 04, especially in Rethan in the Nair case. Rethan was a large megalopolis with a population of some 17 million citizens. Throughout UQ 04, the majority of the Rethanian population, if not overtly hostile, was not of a mind to do Blue's bidding. Additionally,

¹⁴ U.S. Army TRADOC (2004b).

¹⁵ In World War II, the scale of the conflict required not only campaign phases, but multiple campaigns within the various theaters of operations.

Rethan contained a large number of Red conventional and paramilitary forces. Rethan was a problem Blue never really came to grips with—much less solved—during UQ 04.¹⁶

As already noted, the potential to isolate Nairians opposed to the coalition invasion through an information campaign was highly unlikely, given the sentiments of many, if not most, Nairians. Furthermore, any incursion into Rethan was likely to result in significant combat, with attendant collateral damage, that would only serve to further disaffect the population. The Blue commanders in Cases A and B made only limited forays into Nair. In the main, they chose to attempt to lay a modern-day siege to Rethan. This approach was fraught with problems. Over time, even though humanitarian supplies were allowed into the city, public health problems were bound to deteriorate, and Nairians would hold Blue responsible. Additionally, Blue believed that there was a strong probability that Red had hidden WMD, specifically some of its surviving nuclear arsenal, in Rethan. Thus, Blue believed it would eventually have to deal with this huge urban dilemma to avoid a humanitarian disaster and to accomplish its principal mission of securing Red's WMD. If nothing else, the situation in Rethan at the end of UQ 04 shows how much work remains in the area of joint urban operations.

FP.2. *How does the joint force control and protect LOCs while conducting simultaneous dispersed operations?* Lines of communication include the facilities, transportation networks and units that link, in a theater of operations, the operational support base(s) to tactical formations. Control and protection of LOCs is critical to joint force maneuver and necessitates significant allocation of forces to counter hostile efforts to interdict LOCs, especially on a non-linear, non-contiguous battlefield.

¹⁶ It should be noted that taking on Rethan was necessary to satisfy this particular UQ 04 study issue. Thus, the Rethan battle was preordained, but its operational purpose was never clearly articulated.

The issue of protecting LOCs during simultaneous dispersed operations played itself out fully during UQ 04. As already noted, Blue dispositions at the outset of UQ 03 were designed to support major combat operations, with the inherent assumption that they would be decisive and create conditions for the transition to stability operations in short order. The six lines of operation in Nair epitomized this approach. Unfortunately, Red did not collapse at the end of UQ 03, and Blue was ill-disposed throughout UQ 04 to meet continued Red resistance. Thus, Blue faced the requirement to protect multiple lines of communication—which in some cases stretched hundreds of kilometers. Aside from complicating sustainment, these long and insecure LOCs also had implications for the timely evacuation of Blue casualties.

The requirement to secure LOCs necessitated the diversion of Blue forces to protect LOCs at the expense of other missions. Again, the disposition of the Blue force only exacerbated this problem. As a consequence, Blue never generated sufficient combat power to even begin to come to grips with the prospect of urban operations in Rethan or, for that matter, any other operation.

FL.1. *How is the joint force deployed, employed and sustained in a campaign?* The deployment, employment and sustainment of forces are interdependent activities.

As with the previous issue, this study issue is really a component of the question of operational art—of how to design a campaign plan that accounts for the totality of a conflict, not just major combat operations. The inability of Blue to force an early and near-complete decision on Red in either the Sumesian or Nairian theaters resulted in a protracted conflict in both. Again, because Blue was deployed and employed along multiple lines of operations, the sustainment issues were beginning to loom large by game's end. The fact that many LOCs were subject to Red interdiction only made matters worse.

One sustainment issue that arose in NAIR Case B bears further study. Blue forces outside Rethan suffered a fair amount of attrition, both in personnel and equipment. Given the training and specializa-

tion of individuals and teams in the Future Force, some questioned the capability of the current individual replacement system to meet casualty replacement demands in units that would stay in the line. Additionally, replacing end items, e.g., Future Combat Systems, could also prove problematic. Platform costs and the likely limited production of these systems could mean that there might not be a reservoir of systems to rapidly replace battle losses. Both these issues raised flags about the sustainment of Future Force formations in protracted conflicts, even when only moderate attrition occurs.

Assessment of the Four Objectives Centered on Concepts for Major Combat Operations, Transition to Post Conflict, Stability Operations, and Network-Enabled Battle Command

Two of these four objectives—concepts for major combat operations and for stability operations—have already been covered. In UQ 04 the transition to post conflict was never really examined, because neither theater ever approached a condition of “post conflict.” Network-enabled battle command has been covered somewhat in the Battlespace Awareness discussion. Suffice it to say that this area is not amenable to investigation in wargames that have the resolution of UQ 04, other than providing a broad, subjective sense of the potential of such a concept. This area requires a highly granular approach to clearly understand its potential and limitations. It will be discussed further in the final chapter of this report.

Assessment of Joint Interdependencies

UQ 04 provided insight into four of the five areas of joint interdependency: joint force protection, joint logistics, joint battle command, and joint fires and effects. Joint air and missile defense was largely not assessable because Red posed no air or missile threat in Sumesia or Nair in UQ 04.

Joint Force Protection. The joint force protection issue had several dimensions in the two theaters, with some overlap. The areas of commonality were continuing threats to LOCs and threats to low-flying aircraft from MANPADS and guns. In Sumesia, the threat to Blue ground forces was largely what might be expected from a diffuse

insurgency; it has been covered in the earlier discussion of the force protection study issue. In Nair, the threat from Red conventional forces in being and from paramilitaries was still significant at the conclusion of UQ 04.

Nair, however, was the locus of the most significant joint force protection issue in UQ 04—nuclear weapons (and other WMD) that had not been located and neutralized. Further complicating the nuclear weapon problem was the probability, in Blue's mind, that some might have been hidden in Rethan. At game's end, Red Nairian forces still had the potential to inflict massive casualties on Blue, or on its own population, by employing these weapons. Consequently, this force protection issue of enormous import had not been mitigated and loomed large throughout the game.

Joint Logistics. This area has already been covered in some detail. Although the resolution of the game did not afford an opportunity to assess logistical issues in detail, there were some clear signposts for future consideration. The challenges of supporting two large theaters of operation, on opposite sides of the globe, are daunting. In Nair, the inherent difficulties of supporting a geographically large theater of operations was complicated further by Blue dispositions for simultaneous, distributed major combat operations. When the war did not conclude rapidly, the joint logistical challenges of supporting six lines of operations over long distances was further complicated by the insecurity of the LOCs. Although aerial resupply might be an alternative for one or more of the task forces, the scale of the theater and the dispersion of the units requiring support render such an approach at best only a partial solution.

Joint Battle Command. Given the resolution of UQ 04, it was difficult to assess the interdependency issues related to joint battle command. Again, geographical scale and dispersed force issues within and between the two theaters would lead one to believe that this area needs further investigation. How seamless will C4ISR systems between Services be in 2016? How will bandwidth limit joint battle command? These and other questions still beg for comprehensive answers. Furthermore, wargames like UQ 04 are appropriate venues only for identifying these questions—not for answering them.

Joint Fires and Effects. Throughout UQ 04, the joint fires and effects capabilities—which served Blue so well in UQ 03—did not contribute decisively to conflict resolution. This system is optimized for major combat operations against fairly rich and identifiable target arrays. Nevertheless, the Senior Leader Seminar noted that the sheer scale of the two theaters “radically increases the load on Joint Fires.”¹⁷ In UQ 04, the issue was not the availability of joint fires and effects capabilities but the paucity of viable targets. The enemy modified its operational concepts. In Sumesia, Red adapted to overwhelming Blue conventional capability by dispersing and employing insurgency tactics. In Nair, Red began a nonconventional campaign against Blue LOCs and forces and moved some of its forces into the cities, most notably Rethan. In both theaters, effective employment of joint fires and effects became increasingly problematic—both for lack of targets and for Blue’s desire to avoid collateral damage that would hinder post-conflict operations.

Assessment of Joint Concepts

Enough has been said at this juncture about joint concepts for major combat operations and stability operations. Again, the most significant insight both during the game and at the SLS is that Joint Operations Concepts should be based on a campaign approach to achieving an end-state, rather than on addressing points on the spectrum of operations. The remainder of this section will focus on joint concepts for joint urban operations, seabasing, multinational and interagency operations, and a Joint Forces Support Component Command.

Joint Urban Operations. Urban operations have been discussed earlier in this report. In Nair, UQ 04 demonstrated that the problem presented by a large, sprawling urban area—inhabited by hostile citizens and controlled by enemy forces possessing WMD—requires much more investigative effort. The Senior Leader Seminar acknowl-

¹⁷ U.S. Army TRADOC (2004b).

edged this, noting: “The Joint Force needs . . . Operating concepts for mega-cities and urbanized regions.”¹⁸

Urban operations, although they may have a joint dimension, remain largely the domain of the U.S. Army and the U.S. Marine Corps. Although several players presented C4ISR and strike capabilities—including new sensor suites and UAVs—that might make a contribution in urban operations if they are fielded, they are only supporting capabilities. The hard reality remains that an adversary’s ability to use urban terrain to his advantage poses a daunting challenge that will fall largely on the ground forces to resolve if the urban area is to be controlled. Additionally, there may never be a purely technical solution (sensors) for locating enemies in urban or other complex terrain. Furthermore, although conceptually attractive, notions that urban operations can somehow be “precise” and that collateral damage can be limited have little basis in past military experience. If history is any guide, the enemy within the urban area will make the final decision about the intensity, destructiveness, and duration of the urban fight. If the enemy chooses to fight, the joint force could face another Grozny. If he fades away, Baghdad during Operation Iraqi Freedom may define the urban battlefield. Again, the decision to contest the joint force in urban terrain is the enemy’s to make, and joint urban operational concepts should be capable of dealing with his decision.

Seabasing. Seabasing was covered in the SLS as a potentially important capability in the realms of deployment, maneuver, force protection, and sustainment.¹⁹ The major implications for the Army fall into two realms. First, the Army—in conjunction with the other Services—needs to explore the doctrinal and organizational issues posed by seabasing. Second, the equipment issues involved in seabasing must be addressed. What are the implications for existing and future materiel programs of having to modify or design (i.e., “marinize”) Army equipment to ensure acceptable operational readi-

¹⁸ U.S. Army TRADOC (2004b).

¹⁹ U.S. Army TRADOC (2004b).

ness rates in the rigors of the maritime environment and to operate from Navy platforms? Although emerging Army concepts envision short-duration “lily pad” operations from seabases, the Sumesia case involved protracted operations. Operating from seabases reduced the vulnerability of Army forces and simplified logistics. Similar cases may arise in the future that could require the Army to prepare its equipment to operate in the maritime environment. Further, there is the important and unresolved issue as to whether the Navy and Army can develop a joint requirement for a heavy-lift vertical takeoff and landing (VTOL) aircraft to facilitate more ambitious joint seabasing operational concepts. Also, seabasing is not a “silver bullet” or a panacea, as noted above in the discussion of its use in Sumesia, but rather an additional option to be weighed against other forward-basing options.

Multinational and Interagency. The Senior Leader Seminar highlighted the importance of the multinational dimension of operations in Nair and Sumesia, as well as the deficiencies of the joint and interagency planning in both theaters. The emerging insight about joint and interagency difficulties was particularly trenchant: “A Joint Interagency Coordination Group at the Combatant Command level was necessary but not sufficient to enable interagency unity of effort throughout the campaigns,” because no organizations exist to achieve “unity of effort and coherency between military and non-military means.”²⁰

As a consequence of this lack of interagency and, to a lesser degree, multinational integration, players in UQ 04 experienced “unanticipated setbacks” in the areas of “humanitarian assistance, information operations, restoration of essential services, etc.”²¹ The designers of UQ 04 and earlier games have been sensitive to the area of multinational and interagency concepts and have consistently tried to improve it, with mixed results. In addition to the wargame itself, the National Security Seminar and other pre-game events have at-

²⁰ U.S. Army TRADOC (2004b).

²¹ U.S. Army TRADOC (2004b).

tempted to address these concerns. Nevertheless, the central reality remains that, as in past wars, the military will be the component of national power to conduct campaigns that create the “post-conflict conditions” under which other U.S., coalition, and nongovernmental agencies can become more engaged. Thus, campaign plans must be designed to meet all the requirements of the campaign—not just major combat operations. And the campaign must be adequately resourced for these other-than-war requirements—including, among others, civil affairs, military police, engineer, and civil government capabilities.

A game-related insight emerged in this context: Given the need for coalition forces to work with the government of Sumesia and help it reestablish control in the northern part of the country, it would have made sense for a dedicated team to role-play the Sumesian government. There were times when the Blue Sumesia team, in planning its next move, would have liked to interact with a Sumesian government team—to consult with or try to influence other independent players directly, to determine whether campaign objectives involving the Sumesian government were achievable, and to assess more realistically whether the desired end-state could be realized.

Unfortunately, absent participation by multinational and interagency players, the games are largely informed by U.S. military officers playing these roles, albeit with a smattering of foreign military officers and interagency representatives. Therefore, the games, by their very nature, tend to reflect a military bias toward conflict resolution. This will be discussed further in the final chapter.

Joint Forces Support Component Command. A concept for a Joint Forces Support Component Command was presented during UQ 04. Although the SLS noted that “A Joint Force Support Component Command-like organization would help mitigate risk,” this was mainly conjecture in the Nair theater.²² This area is another that requires a different investigative methodology, because UQ 04 did not have the granularity to assess the implications of the sustainment

²² U.S. Army TRADOC (2004b).

system, other than to note that the system had obvious deficiencies supporting the six distributed Joint Task Forces in Nair and in the extended Sumesian theater. This area will be addressed further in Chapter Three.

Assessment of the Implications of the Central Study Question and the Related Analysis Question

The designers of UQ 04 and its pre-game activities created an environment within which the central study question (“Identify the concepts and capabilities required to counteract an adversary who, having lost most of his conventional capability, seeks decision through a combination of protracted, unconventional operations and WMD employment”) and the related analysis question (“How does the joint force conduct and sustain simultaneous distributed maneuver in a non-contiguous battlespace?”) could be assessed. Participants in the game believed and acted as if they faced the adversary envisioned in the central study question. In reality, as already noted, Blue faced determined adversaries in Sumesia and Nair that retained significant capabilities. The major point to carry forward from UQ 04 is the proposition that a plan designed for major combat operations through simultaneous distributed maneuver on a non-contiguous battlespace—the operational approach taken in UQ 03 and played out in UQ 04—may not be appropriate in all circumstances, and may even prove counterproductive, if the adversary does not capitulate in the face of major combat operations and instead resorts to protracted, unconventional operations.

One component of the central study question was not adequately examined: the WMD capability of the adversary. Nair posed the greatest WMD threat, because all the nuclear weapons possessed by Nair had not been neutralized by game’s end. Nevertheless, Nairian forces never employed their nuclear weapons to any effect during the game. Therefore, the implications of this critical component of the central question have not been assessed. For this reason, there is a strong need to develop exercises that explore the full range of implications in the conduct of a regional war against an opponent armed with an emerging nuclear arsenal. At this time, this problem seems to

remain in the category of “too hard.” Nevertheless, the probability of the emergence of likely regional nuclear threats, such as that posited in the UQ 04 exercise, argues for a major and focused effort by both the Army and the joint community to confront such a challenge.

Recommendations and Conclusions

This final chapter provides recommendations for improving the studies program that informs JFCOM and TRADOC's future warfare concept development efforts. It also contains our conclusions about UQ 04. We provide recommendations in two categories: areas requiring increased analytical effort and suggestions for improving the analytical methodology of the Future Warfare studies program. These recommendations are offered in the spirit of constructive criticism with the goal of further improving the Future Warfare studies program. We end with several overarching conclusions about UQ 04 and the events that preceded it.

Recommendations for Improving the Future Warfare Studies Program

Areas Requiring Increased Analytical Effort

Perhaps the most important recommendation was one offered by Army Chief of Staff General Peter Schoomaker during the Senior Leader Seminar. General Schoomaker noted that knowing now how the plans posited in UQ 03 played out in UQ 04, one should begin again from square one and study how to design a campaign that incorporates the lessons from both gaming events. In short, given our knowledge of UQ 04's outcome, how should the campaign plan put in motion in UQ 03 be redesigned to achieve the desired end-states?

Again, as noted earlier, one of the key points brought up in UQ 04 was a necessary change in conceptual approach. The conceptual architecture played in UQ 03 and UQ 04 was one that employed a sequential approach: major combat operations followed by stability operations. This approach proved problematic in UQ 04, when concepts explored in wargames focused primarily on mid- to high-intensity conventional combat operations did not force the capitulation of the Sumesian or Nairian adversaries in the wake of U.S. major combat operations. In both Sumesia and Nair, the enemy was able to continue the conflict through protracted unconventional operations and the lingering threat of employing WMD. This reality—played out most dramatically in the Nair case, but in the Sumesia case as well—argues that joint and Service future warfare concepts must be grounded in a campaign approach whose goal is the realization of a political, as well as a military, end-state. In short, what end result did Blue want to accomplish in Nair and Sumesia, and did the concepts for conflict resolution employed in UQ 03 and UQ 04 offer viable means to achieve the desired end-state?

UQ 04 also raised several significant issues that we recommend be included in the studies program. Although these have already been addressed to varying degrees earlier in this report, they bear further mention. They include nuclear weapons; urban operations in megacities; unconventional counterinsurgency and counterpartisan operations; joint, interagency, multinational, and nongovernmental coordination; doctrinal dilemmas; assessing technical assumptions; and the framing of study issues and essential elements of analysis. Below, we elaborate further on these issues and make some suggestions about their place in the Future Warfare studies effort.

Nuclear Weapons. Although the potential for Red to use nuclear weapons (and other forms of WMD) was explicitly considered in designing the game, the enormity of the challenge posed by a handful of nuclear weapons in Nair was never fully addressed. This is clearly understandable in the context of a large wargame like UQ 04, since the effective use of a nuclear weapon in Nair would have radically refocused the game on dealing with such a calamity. Nevertheless, given that some future (and current) potential adversaries might well pos-

sess a nuclear capability, this issue must be grappled with in all its dimensions, precisely because its implications cut across the UQ 04 study issues. In the domains of joint C2 and battlespace awareness, the electromagnetic pulse and the physical destruction implications of Red's employing a nuclear weapon would likely have significant effects on Blue's capabilities to see, understand, and direct a campaign, as well as to use force to achieve intended results (force application) and sustain operations (focused logistics). Furthermore, the cataclysmic implications of a successful Red nuclear strike on Blue forces and/or noncombatants (deliberately or collaterally) raise enormous force protection issues and potentially overwhelming demands on medical, decontamination, humanitarian assistance, and logistical capabilities (focused logistics).

As noted earlier in this report, the issue of dealing with an opponent possessing some nuclear weapons (and, to a lesser extent, other forms of WMD) should be the subject of a major and focused effort.¹ Ironically, such a study effort might validate the need for major combat operations that are simultaneous and distributed—not only for the operational advantage they offer in presenting an adversary with multiple dilemmas but also because such a concept might be necessary to obviate the dilemma a small number of adversary nuclear weapons could pose to massed Blue formations and logistical nodes. One possible answer to the radically increased lethality of a nuclear-armed threat is that the joint force may have to rely much more heavily on mobile and defended sea bases and/or defended bastions (“hubs” with robust theater air and missile defenses) located some distance away from a regional combined-arms battlefield.

Thus, the decision to task organize for significant challenges that require mass, e.g., dealing with urban operations in a mega-city, may well have to be deferred until the nuclear threat is dealt with. Further

¹ The Cold War experience may provide some tactical and operational insight into the nuclear issue. It is not clear that its strategic lessons—based on various constructs of deterrence—would apply to a nation that has been invaded for the purpose of preventing it from attaining a nuclear capability. Thus, Nair, at least in the nuclear sense, might more resemble Cuba during the Cuban Missile Crisis of the 1960s than the more studied NATO–Warsaw Pact confrontation in Europe.

complicating the issue is the fact that an adaptive adversary might choose to bring his WMD capabilities into the mega-city to protect them. The daunting nature of a plausible regional campaign involving the use of nuclear weapons requires that all aspects of current Joint Operations Concepts for major combat/stability operations will have to be reconsidered—in all of the dimensions described above. Again, these challenges require much greater study.

Urban Operations in Mega-Cities. The question of how to conduct effective joint urban operations in mega-cities, particularly as played out in the city of Rethan in Nair, was not resolved during UQ 04. In the Case A and Case B panels that focused on Rethan, it soon became evident that Blue's capabilities were inadequate to deal with operational dilemmas posed by that massive urban area, peopled by some 17 million residents who were largely hostile to Blue and at least tacitly supportive of Red's conventional and unconventional forces.

In addition to the sheer scale of the problem presented by Rethan, the urban fight also raised questions about the comprehensiveness of C2, battlespace awareness, and force application capabilities—designed to support full-spectrum operations. In the Case A and Case B Nair panels, the difficulties of understanding enemy dispositions and intentions, obtaining reliable targeting information, and avoiding collateral damage became apparent, as did concerns about inserting Blue forces into the city and not being able to extract them—the Mogadishu dilemma.

Red's supposed possession of WMD inside of Rethan posed a dilemma that Blue would eventually have had to resolve—or face a continuing and significant threat to ongoing operations and to its ultimate accomplishment of the mission that had justified the war in the first place. Once U.S. forces “lay siege” to a city, for want of a better term, the onus is on those forces to resolve the problem. Regardless of what measures are taken to mitigate humanitarian concerns, e.g., letting food and medical convoys into the city as was done in Rethan during UQ 04, the situation will begin to deteriorate over time. However much was going into the city before the war, there will be less during the war—if for no other reason than the insecurity

of LOCs, which are also hampering Blue logistical efforts. The city will become a humanitarian time bomb that could, as noted during the SLS, “Protract conflict . . . exert pressure through information operations and world opinion . . . [and] Create humanitarian crises that complicate military operations.”²

Thus, urban operations in mega-cities require much greater study, particularly when WMD are part of the challenge. As noted earlier, although there are joint implications in urban operations, this seems to be largely an issue area for ground forces to take the lead on and resolve.

Unconventional Warfare Operations. The need for a new theory of conflict that can serve as the basis for revising doctrine was discussed in Chapter Two. This is particularly important when it comes to addressing unconventional threats. The Sumesia case presented significant challenges to Blue forces confronting an adaptive insurgency, but its dimensions and remedies were largely understandable within the context of existing counterinsurgency theory and doctrine. Blue came to the assistance of what it decided was the legitimate Sumesian government. The aim of major combat operations and the subsequent counterinsurgency was to ensure the eventual dominance of the legitimate Sumesian government over the state.

In Nair, however, the situation was dramatically different. Blue invaded a sovereign Nair in a preventive war to remove the threat of Nairian nuclear weapons and to change the regime. Red conducted a coherent national defense, which on occasion assumed unorthodox forms aimed at defeating an invader and occupier. Blue was trying to establish a new government to replace what, in the eyes of virtually all Nairians, was still the legitimate government. Thus, Blue faced a national territorial defense that challenged the fundamental legitimacy of Blue actions and that had significant popular support. Despite this reality, the Case B Nair Tactical Panel developed an information operations campaign that focused on trying to separate “insurgents” from the population—based on a patently false premise.

² U.S. Army TRADOC (2004b).

One could assume that future conflicts that begin as preventive wars to protect vital U.S. interests may not be greeted as liberating events by the receiving citizenry. Consequently, a study effort to develop a new theory of conflict that explores the dimensions of the U.S. national security doctrine of preemptive war—one that includes resistance by the invaded population—needs to be articulated. Furthermore, doctrine and operational concepts should be developed to deal with these new challenges. Quite simply, UQ 04 demonstrated that existing doctrine and operational concepts are not fully adequate to the challenges posed by the emerging conflict environment of the future when considered in all of its dimensions.

Joint, Interagency, Multinational, and Nongovernmental Coordination. The difficulties of designing a study program at JFCOM and TRADOC that enjoys the participation and support of the interagency community are formidable. Absent such participation and support, however, many aspects of UQ 04 and its pre-game events necessarily take on a military bias. This is an issue that goes beyond game participation—it is also a problem in concept development. As UQ 04 highlighted, the achievement of desired end-states in Sumesia and Nair should have been the driving factor in the design of the campaign plans that were executed in UQ 03. These end-states, however, are not merely military objectives; they are political by their very nature and subject to the vagaries of U.S. and coalition political processes. Indeed, political considerations might impede the achievement of the strategic end-state. In UQ 04, the political decision to invade Nair and simultaneously fight in Sumesia did not adequately account for the military resources these campaigns would require. The multinational dimensions of the two scenarios only add more complexity to the definition of acceptable end-states and the implications of coalition political considerations.

This is a difficult area to address, given the inability of JFCOM or TRADOC to consistently garner support from external (U.S., multinational, nongovernmental) agencies. Strenuous efforts have been made in this regard. Active and retired members of several U.S. agencies, foreign officers, and nongovernmental agency representatives participated in UQ 04. Nevertheless, their roles were keyed to

providing expertise, rather than playing a realistic role in planning and decisionmaking—much less the development of concepts that were played out in the game. Given the centrality of these extramilitary players in conflict resolution, a means for realistically incorporating their perspectives into the studies program, concept development efforts, and wargames requires continued effort.

Doctrinal Dilemmas. UQ 04 pointed up several areas of doctrinal concern. At the heart of the doctrinal dilemma is the organic assumption that forces organized, trained, and equipped for mid- to high-intensity combat in noncomplex terrain can competently deal with adversaries in complex terrain (urban mega-cities, mountains, jungles) and with the lower end of the spectrum of conflict as lesser-included cases. In UQ 04, this assumption was called into question in both Sumesia and Nair. One could well surmise, based on the past two years of gaming experience, that JFCOM and the Army are developing concepts, organizations, and technologies to fight UQ 03–like major combat operations, with the assumption that they will be equally effective in the UQ 04 environment of protracted, unorthodox operations. As UQ 04 seemed to point out, there could well be significant problems with this assumption. From the perspective of the design of the Army Future Force, this finding also raises a question of central import: What kinds of forces does the Army need to train, organize, and equip to operate effectively across the spectrum of conflict?

Assessing Technical Assumptions. In UQ 04, as in previous wargames, many technology-based capabilities were required to realize operational concepts. Frequently, however, these technological enablers, regardless of operational conditions, were employed with little thought to their potential limitations. This was particularly true with regard to C4ISR technologies that directly enable joint C2 and battlespace awareness and also affect force application, focused logistics, and force protection. In short, the implications of a broad range of C4ISR technological assumptions are critical to the resolution of most UQ 04 study issues and fundamental to the realization of concepts for the Future Force—but they are rarely a focus of specific analysis in and of themselves.

The issue of supporting widely distributed forces—themselves stretched and dispersed—with currently envisioned communications technologies needs to be rigorously analyzed. At what distances do unit of action (UA) and unit of employment (UE) networks begin to degrade, and what are the implications for joint C2, battlespace awareness, force application, focused logistics, and force protection? How will these networks perform in complex terrain (urban megacenters, jungles, mountains)? How will Future Force units achieve and maintain situational awareness at close quarters in complex terrain? These questions are central to the ability of the Future Force to operate effectively and they are amenable to modeling and simulation. In short, it is perhaps time to begin analyzing the technical assumptions (and operational assumptions) that are embedded in emerging Future Force concepts as part of the studies program—to begin understanding what inherent limitations might exist in diverse operational environments and to begin suggesting alternatives to address any identified gaps.

Suggestions for Improving the Future Warfare Studies Program's Analytical Methodology

This section addresses methodological areas whose improvement could enhance the analytical products derived from the Future Warfare studies program. First, we offer suggestions on reframing study issues and essential elements of analysis. Second, we provide some general suggestions for improving the Future Warfare studies program's analytical process that precedes the major spring wargame, e.g., UQ 04.

Framing of Study Issues and Essential Elements of Analysis.

One critical area in enabling the conduct of effective analysis by the Future Warfare studies program is the framing of relevant study issues and essential elements of analysis. The majority of the study issues focus on operational concepts rather than the capabilities required by the concepts. Furthermore, many of the study issues and EEA begin with the word "how." An example is EEA BA.2.1: *"How does the joint force gain and maintain situational awareness?"* Situational awareness includes knowledge of friendly, enemy and neutral entities

as well as an appreciation of terrain.” This EEA has three principal deficiencies in an analytical architecture whose purpose was to provide insight into UQ 04’s examination of joint and Army future operations. First, the question could not be evaluated empirically in UQ 04 because of the game’s lack of granularity. Second, the question implies that qualitative or quantitative “knowledge” metrics can be reached without those metrics ever having been provided.³ Third, the question implies that the challenge is mainly operational rather than technical. Finally, the same questions provided as an analytical basis for UQ 04 could also be posed for today’s force because they are largely subjective in nature and are really not Future Force-specific.

This gets us to the points raised in the preceding section under “Assessing Technical Assumptions.” Many of the UQ 04 study issues and EEA appear to assume that the capabilities required for the concepts played in UQ 04 are technologically neutral—operational adjustments might be necessary, but there is no questioning of the promise of the technologies central to the concepts. Furthermore, it is often not explicit what specific technologies actually enable capabilities and concepts. Again, as noted earlier, the assumption that saturating Rethan with UAVs would provide both situational awareness and precision strike against small and fleeting targets was accepted by players in the Case B Panel (Nair Tactical) and was inserted into play by the U.S. Air Force player on the team without challenge. This action raises several questions: Does the Army concept for urban operations include U.S. Air Force UAVs (guided and autonomous) that will be present in large numbers in areas where ground troops are operating? What is the development and procurement status for these systems, which the U.S. Air Force player indicated would make a significant contribution to the urban fight? Will they be fielded in 2016? Who is responsible for airspace management of these and other Service UAVs and for fire support deconfliction? These questions, and many others about specific technologies, were largely not captured by the analysis plan.

³ There is a growing body of literature that focuses on measuring “knowledge.” See, for example, Darilek et al. (2001); Perry, Signori, and Boon (2004); and Perry and Moffat (2004).

RAND has done a significant amount of work for the Army Medical Department (AMEDD) in helping to frame issues critical to ensuring that future concepts are capable of providing adequate support to the Future Force. The first step in this process was taking the collected insights, observations, and nominal issues from the AMEDD's wargames and workshops and turning them into issues that provide a basis for a disciplined analytical process. To do this, several criteria were used to define an "issue":

[A]n issue:

- Asks an important question in relevant timeframes.
- Often relates to key capabilities that enable the overall transformation concept.
- May suggest multiple paths (alternatives) to issue resolution.
- Does not presuppose a solution.
- Is specific enough to prompt analysis.
- States uncertainty.
- Requires iteration over its lifetime in order to discover its full dimensions and alternatives for resolution.

To present the issues in a taxonomy that supported their investigation and resolution, RAND reclassified the issues using AMEDD's Integrated Concept Teams (ICTs) as an organizing construct. Finally, the issues were further assessed against six prioritizing criteria:

- The degree of risk to the Army if the issue is not resolved.
- The degree to which the AMEDD is in control of the resolution of the issue.
- The specificity of the issue.
- Whether future force and current force resolution of the issue may differ.
- A determination of whether the issue is persistent or conditional.

- A determination of whether or not the issue is resolvable in isolation or if it is linked to another issue (AMEDD or non-AMEDD).⁴

In the case of the last criterion—"A determination of whether or not the issue is resolvable in isolation or if it is linked to another issue (AMEDD or non-AMEDD)"—the relevant Army criterion might be: "A determination of whether or not the issue is resolvable in isolation or if it is linked to another issue (Army, other Service, joint, or interagency).

Reframing EEA BA.2.1 ("How does the joint force gain and maintain situational awareness?") as a different question—"What constitutes adequate situational awareness in various operational environments and how is it obtained?"—might show how this process could be applied to tighten the UQ 04 study issues and EEA. The "what" part of the question drives a quantitative analysis to determine sufficiency; the "how" component would lead the analyst to an assessment of various technologies, concepts, and C4ISR arrangements. Underlying this EEA could be sub-EEAs that drive analysis of the available technologies over different developmental and fielding timeframes, the performance gaps of various technologies in different situations, the requirements for cross-Service integration, bandwidth requirements, etc.

With study issues and EEA redefined in a manner similar to the approach suggested above, the analytical architecture employed in future JFCOM/Army games (and other supporting analytical endeavors) could provide more useful data and insights into the challenges inherent in emerging concepts. These concepts could then be subjected to more detailed analysis to determine technological and operational gaps and to develop alternative approaches.

⁴ Johnson and Cecchine (2004), pp. 4–5. Integrated Concept Teams are cross-AMEDD working groups that focus on developing AMEDD concepts and capabilities in specific domains, e.g., evacuation, combat casualty care.

Suggestions for Improving the Future Warfare Studies Program's Analytical Process

The culminating event in the Future Warfare studies program has traditionally been the spring wargame, e.g., UQ 04. The problems inherent in such a large wargame are well known—too big, with too many moving parts. Nevertheless, it has significant utility because of the large numbers of participants it draws from across the Army and other communities (joint, Service, interagency, multinational, etc.). Quite simply, the spring wargame serves as a vehicle for educating large numbers of individuals from relevant communities about emerging joint and Army future warfare concepts. It also provides an environment within which players, particularly senior officers and mentors, can be immersed in future warfare scenarios for a significant period of time, with relatively little distraction, where they can identify and discuss emerging insights and issues. Consequently, the spring wargame has intrinsic value as a culminating event for the Future Warfare studies program.

However, some things should not be expected of the wargame. A RAND report following the 1997 Army After Next (AAN) wargame noted:

Although we strive to improve the analytic foundation of the AAN wargames, it should always be their goal to generate issues rather than conclusions or analytic findings. There are two primary reasons for this: (1) the games are set in the distant future . . . where uncertainties are such that the adjudication process will continue to be dominated by best military judgments, and (2) the games involve too many teams and interactions to enable confident identification of cause-and-effect relationships.⁵

This report goes on to note that:

The annual wargame series can be viewed as capstones to a year or more's study or as the foundation for the next round of research. Both views are correct in that the wargames generate is-

⁵ Perry and Millot (1998), pp. 39–40.

sues that focus subsequent research, and they draw on research results to provide game inputs, rationalize the adjudication process, and train players and adjudicators.⁶

The wargame should be a forum in which a broad community participates in an examination of concepts, force structures, capabilities, and processes, etc., that have been derived through other study venues. Thus, the wargame educates the participants, who in turn provide feedback on the game's components and results and identify issues and insights that will assist in the development and refinement of Future Warfare studies programs and supporting activities. Again, the 1997 report highlights the importance of such a process:

Needed is a strategy that embeds the annual . . . wargames into the . . . process. . . . [W]argame results and the . . . process must have external credibility if they are to influence policy—especially with respect to the allocation of scarce resources to support Army programs. The key to credible results is a thoughtfully executed and broadly supported . . . study program. The loose coupling between the annual wargame series and other . . . activities should be replaced with a stronger relationship in which . . . activities support—and are supported by—the annual . . . wargames.⁷

Thus, several steps could be taken to enhance the analytical rigor of the Future Warfare studies program:

- Reframe study issues and EEAs.
- Establish a process to examine the implications of the emerging insights from UQ 04 and a mechanism to inform the concept-development process with the results.
- Establish a process to examine areas requiring increased analytical effort (nuclear weapons; urban operations in mega-cities; unconventional warfare; joint, interagency, multinational and

⁶ Perry and Millot (1998), pp. 40–41.

⁷ Perry and Millot (1998), pp. 37–38.

nongovernmental coordination; doctrinal dilemmas; assessing technical assumptions) and a mechanism to inform the concept-development process with the results.

As a further recommendation, the processes by which the second two points are addressed might be tightly focused seminars and/or exercises that investigate a single emerging insight or area requiring increased analytical effort. The results of these investigations could be fed back into the concept and force development processes.

Conclusions

UQ 04 was, in the best sense of the term, an “experiment,” defined as “an act or operation carried out under conditions determined by the experimenter . . . in order to discover some unknown principle or effect or to test, establish or illustrate some suggested or known truth.”⁸ Game designers used the accumulated knowledge from their assessment of the results from UQ 03 and pre-UQ 04 events to design and execute an experiment in the form of a wargame that tested evolving joint and Army future warfare concepts in a realistic scenario and in an unbiased manner.

The important insights from UQ 04 are reflective of the open environment within which the game was conducted. Participants were encouraged to ask hard questions and push concepts to failure—and to admit failure, rather than to validate concepts. Consequently, the game produced extraordinarily important insights and issues that can inform a Future Warfare studies program. This result can only serve to improve evolving joint and Army operational concepts.

⁸ *Webster's Third New International Dictionary*, 1993, p. 800.

UQ 04 Study Issues and Essential Elements of Analysis

Battlespace Awareness

BA.1. *How are joint force information requirements developed, satisfied and used?* How does the joint force identify information requirements and assign available capabilities to collect against those requirements?

BA.1.1 *How does the joint force develop information requirements?* The mission analysis process should highlight certain key elements of information needed to support decision-making. Are critical information requirements developed that, when answered, provide relevant information?

BA.1.2 *How does the joint force collect against information requirements?* How are collection assets assigned missions to satisfy information requirements? Is an effort made to validate information by using multiple sources (e.g., SIGINT with HUMINT)?

BA.1.3 *How is joint force information flow degraded?* What environmental, operational or organization factors affect joint force collection, processing and dissemination of quality information?

BA. 2. *What are the implications on operational concepts and force attributes of not achieving information superiority?* Information superiority is predicated on collecting, processing and disseminating an uninterrupted flow of information. Is there evidence that the joint

force has forfeited an operational advantage by failing to collect, process and disseminate information?

BA.2.1 How does the joint force gain and maintain situational awareness? Situational awareness includes knowledge of friendly, enemy and neutral entities as well as an appreciation of terrain.

BA.2.2 How does the joint force react to unexpected situations? While the common operational picture can be used to predict likely enemy courses of action, an adaptive (or uncooperative) adversary may not operate predictably. How do unforeseen enemy actions affect joint force planning and execution?

BA.2.3 How does the joint force develop a reconnaissance and surveillance plan? The intelligence preparation of the battlefield is used to focus information collection efforts. The IPB also influences the development of the reconnaissance and surveillance plan.

BA.2.4 How does the joint force conduct counter-reconnaissance operations? Is there a cogent effort to deny hostile ISR efforts through the use of active (e.g., SOF) or passive (e.g., OPSEC) measures?

BA.2.5 How does the joint force identify, assess and mitigate risk associated with a lack of information? Consideration of risk results in risk guidance that affects planning, operational design and the execution of operations. Merely developing CCIRs and EEIs to fill voids in information does not resolve the dilemma caused by a lack of (quality) information—what does the joint force do to anticipate enemy courses of action?

Joint Command and Control

C2.1 How do joint, interagency and multinational forces synchronize objectives to achieve end-state in major combat and stability operations?

This question examines the coordination of campaign objectives to realize end-state (as opposed to the accomplishment of individual objectives).

C2.1.1 How does the joint force articulate end-states for major combat and stability operations? ‘End-state’ is a statement of the conditions that, when achieved, accomplish the mission. It may also state what the force must do with respect to the enemy and the terrain in order to achieve the desired end-state.

C2.1.2 How does the joint force determine priorities and allocate capabilities to achieve end-states in major combat and stability operations? Force capabilities are prioritized to achieve objectives by arranging and employing forces in time, space and purpose.

C2.1.3 What are the demands on the joint force as it transitions between major combat and stability operations? Forces can expect to conduct simultaneous combat and stability operations during which the priority of effort and forces committed to each operation will change thus, transitions must be anticipated and planned for. Transitions between operations are difficult to accomplish and may create opportunities for adversaries.

C2.2 How does the joint force synchronize joint, interagency and multinational efforts to achieve campaign objectives? Campaign objectives are the necessary intermediate steps to achieve end-state. These are not necessarily physical objectives, but might include such things as achieving air superiority, securing sea LOCs and changing a regime. The process of synchronizing US and coalition military power with other elements of national power to achieve objectives is difficult due to differences in language, culture, systems and operating procedures. Synchronized efforts generate complementary and reinforcing effects to achieve objectives. ‘Efforts’ refers to planning, directing, coordinating and controlling forces and operations in order to accomplish the mission. This includes the application of force as well as information and other non-lethal operations.

C2.2.1 How are forces and agencies task organized for missions? Differences in language, culture, systems and operating procedures complicate the process of task organizing US and coalition forces and agencies to accomplish missions. Task organization may include cross-attaching units or changing command and control relationships.

C2.2.2 How are mission tasks and priorities assigned to forces and agencies? What thought process is used to integrate joint, inter-agency and multinational capabilities into the overall plan?

C2.2.3 How are forces' and agencies' effects controlled? The missions and purposes of all forces and agencies may not be homogeneous (e.g., humanitarian relief vs. psychological operations) and may necessitate imposition of control measures to promote cooperation and to avoid fratricide without imposing restrictions on the freedom of action of forces and agencies.

C2.2.4 How are boundary conflicts between forces and agencies resolved? Forces and agencies may have areas of responsibility that conform to political or geographic boundaries (e.g., provincial governances or JSOA) and do not coincide with conventional military boundaries. Also, the depth and breadth of an operational area of responsibility may encompass multiple areas of responsibility of other forces, agencies and civil entities.

C2.2.5 How are risks associated with joint force synchronization identified, assessed and mitigated? Consideration of risk results in risk guidance that affects planning operational design and the execution of operations. There are inherent risks associated with the employment of joint forces. For example, differences in systems complicate command and control and communications. Are geographic and functional 'seams' between forces examined to ascertain whether unfavorable consequences can be reduced or avoided?

C2.2.6 How are logistics factors considered in synchronizing forces and agencies? The logistical sustainment of disparate organizations with different materiel systems and unique requirements places complicated demands on the logistical system and the limited resources available. How do logistics factors influence operational decisions?

C2.3. How does the joint force synchronize fires and maneuver in non-contiguous operations? Non-linear operations complicate the integration of joint fires. What maneuver and fire support control measures are developed to ensure timely and effective fires?

C2.3.1 What demands do non-contiguous operations place on the clearance of fires? Can conventional fire control measures (e.g., Fire Support Coordination Line) be employed in non-linear operations?

C2.3.2 What demands do non-contiguous operations place on synchronizing operations? How are requirements for air and ground surveillance, attack and sustainment operations deconflicted to increase effectiveness and responsiveness while reducing the potential for fratricidal engagements?

C2.3.3 What conditions cause the joint force to organize a contiguous or non-contiguous battlespace? How does the enemy force array and centers of gravity influence the decision to conduct linear or non-linear operations?

Force Application

FA.1. How does the joint force conduct continuous shaping operations in support of multiple distributed maneuver? How does the joint force seek to create favorable conditions for operations by using available capabilities? Specifically, what types of operations (e.g., information, security, etc) are employed to set conditions for decisive combat?

FA.1.1 *How does the joint force achieve the main effects of shaping operations?* Shaping operations create favorable conditions for the conduct of decisive operations; thus, the first order effect of a shaping operation is to transition the main effort to a decisive operation.

FA.1.2 *How does the joint force anticipate and respond to the second- and third-order effects of shaping operations?* Second- and third-order effects include intended and unintended consequences of lethal and non-lethal engagements. For example, a shaping operation may provide the joint force with expected opportunities that can be exploited or, conversely, the enemy reaction may be out of proportion to the shaping effort.

FA.1.3 *How does the joint force identify assess and mitigate risks associated with shaping operations?* Consideration of risk results in risk guidance that affects planning, operational design and the execution of operations. Shaping operations may result in unexpected opportunities or situations that require the application of greater force.

FA.2. *What are the joint interdependencies required to achieve effects at the point of action?* Does the joint force possess an understanding of the capabilities that are available to mass effects at decisive times and places? If force capabilities are insufficient or not appropriate to the mission, how does the joint force bring overwhelming force to bear?

FA.2.1 *How are forces task organized to achieve joint effects?* Forces are task organized to accomplish missions and to achieve effects by combining capabilities; how does the joint force select forces for specific missions and temporarily organize these forces to execute the assigned tasks?

FA.2.2 *How are forces task organized as operations transition between major combat and stability operations?* Combat, combat support and combat service support capabilities are task organized to allow the joint force to be able to shift gracefully from

mission to mission. Does task organization (e.g., mix of light/heavy, multi-Service or multi-national forces) cause logistical demands that decrease force effectiveness?

FA.2.3 *How does the joint force identify, assess and mitigate capability gaps between available resources and requirements to achieve joint effects?* Allocation of resources, to include organic capabilities and external capabilities, affects planning, operational design and the execution of operations.

FA.3. *How does the joint force conduct and sustain simultaneous distributed maneuver in a non-contiguous battlespace?* Concurrent non-linear operations place unusual demands on the joint force's capability to command and control, sustain and protect forces in its area of operations. How does the decision to conduct concurrent non-linear operations enhance or detract from overall force effectiveness?

FA.3.1 *What conditions cause the joint force to conduct simultaneous distributed maneuver in a non-contiguous battlespace?* How does the enemy force array and centers of gravity influence the decision to conduct linear or non-linear operations?

FA.3.2 *How is situational awareness achieved in a non-contiguous battlespace?* Having an understanding of the enemy force array and centers of gravity enables the joint force to selectively engage or not engage the enemy. Is every engagement a meeting engagement?

FA.3.3 *How does the joint force execute command and control in a non-contiguous battlespace?* Command and control depends upon the prudent application of positive control and procedural measures to allow forces the freedom of maneuver to accomplish the mission. How does command and control differ substantially during linear and non-linear operations?

FA.3.4 *How does the joint force sustain operations in a non-contiguous battlespace?* Sustainment is critical to joint force maneuver and is complicated by vulnerable LOCs on a non-linear

battlefield. How well are logistics functions executed during non-contiguous operations?

FA.3.5 *How does the joint force protect capabilities in a non-contiguous battlespace?* What measures are taken to protect 'soft' capabilities (e.g., combat service support units, non-combatants) that are transiting the unassigned portion of the battlespace? To avoid defeat in detail, how does the force plan to mass forces and/or effects rapidly?

FA.4. *What are the capabilities and force attributes required to execute major combat and stability operations simultaneously?* The capability sets required to conduct combat and stability operations differ due to the nature of the operations as well as the factors of METT-TC. How does the joint force assess and balance these simultaneous competing demands?

FA.4.1 *How are competing demands for capabilities in major combat and stability operations resolved?* How does the joint force compensate for forces or force enablers (e.g., engineers) that are required in both mission sets?

FA.4.2 *How are the risks of insufficient capabilities identified, assessed and mitigated in simultaneous major combat and stability operations?* Consideration of risk results in risk guidance that affects planning, operational design and the execution of operations. How is the effect of attrition and fatigue factored into overall force capability?

FA.5. *What are the capabilities required to conduct joint urban operations?* Operations in urban terrain will include combat and stability operations that are complicated by complex terrain, the presence of noncombatants, greater threats to lines of communications and rules of engagement.

FA.5.1 *What are the unique demands of operations in urban terrain?* Forces must be prepared for operations in close quarters

that degrade command and control, combined arms coordination and system capabilities.

FA.5.2 How are systems and forces employed for missions in urban terrain? Adversaries will choose combat in cities in order to negate the advantage that US forces have in open terrain, adaptive foes will also attempt to exploit US adherence to restrictive rules of engagement to their advantage.

FA.5.3 How are risks associated with operations in urban terrain identified, assessed and mitigated? Consideration of risk results in risk guidance that affects planning, operational design and the execution of operations. How are combat multipliers engaged, especially HUMINT, counter-intelligence and civil affairs, to exploit non-combatants on the battlefield?

Force Protection

FP.1. How are joint, interagency and multinational (JIM) capabilities used to protect forces during operations? What joint, interagency and multinational capabilities contribute to the conservation of the fighting potential of the joint force?

FP.1.1 What gaps or redundancies exist between requirements and available resources to protect forces during operations? How are joint, interagency and multinational force protection capabilities synchronized to avoid inefficient or ineffective employment?

FP.1.2 How does the joint force adjust to an actual or impending threat to force safety and/or security? Is the joint force willing to commit a reserve force or divert combat power from another effort when there is a threat to the safety and/or security of the force?

FP.1.3 How are risks associated with force protection identified, assessed and mitigated? Consideration of risk results in risk guid-

ance that affects planning, operational design and the execution of operations. How are joint, interagency and multinational force protection capabilities synchronized to avoid inefficient or ineffective employment? To avoid defeat in detail, how does the force plan to mass forces and/or effects rapidly?

FP.1.4 *How does the joint force provide TAMD protection in a non-contiguous battlespace?* How are joint and coalition air and missile defense capabilities integrated under a joint TAMD structure to protect the force from over-the horizon strikes and to minimize the potential for fratricidal ground-to-air engagements?

FP.2. *How does the joint force control and protect LOCs while conducting simultaneous dispersed operations?* Lines of communication include the facilities, transportation networks and units that link, in a theater of operations, the operational support base(s) to tactical formations. Control and protection of LOCs is critical to joint force maneuver and necessitates significant allocation of forces to counter hostile efforts to interdict LOCs, especially on a non-linear, non-contiguous battlefield.

FP.2.1 *How are risks associated with LOC control and protection identified, assessed and mitigated?* Consideration of risk results in risk guidance that affects planning, operational design and the execution of operations. Are responsibilities for LOC control and protection clearly stated so as to avoid ambiguity?

FP.2.2 *How does the requirement to control and protect LOCs influence the assignment of areas of responsibility?* The capability to support and sustain operations (whether they are sequential or simultaneous; linear or non-linear) influences the organization of the battlefield. How does the joint force consider METT-TC factors and logistics considerations (such as responsiveness and survivability) in organizing the battlefield?

FP.2.3 *How does the joint force counter an actual or impending threat to LOC security?* Is the joint force willing to commit a reserve force or divert combat power from another effort when there is a threat to LOC security?

Focused Logistics

FL.1. *How is the joint force deployed, employed and sustained in a campaign?* The deployment, employment and sustainment of forces are interdependent activities.

FL.1.1 *How does the joint force deploy initial-entry and follow-on forces to a theater of operations?* Forces may be deployed over strategic or operational distances direct to the objective or to an intermediate staging area.

FL.1.2 *How do logistics factors influence the employment of forces during a campaign?* Planning factors include consideration of requirements, allocation of resources by priority and integration of efforts to achieve economies.

FL.1.2.1 Factors considered in sustaining forces during a campaign.

FL.1.3 *How does the joint force integrate and synchronize deployment and sustainment requirements?* Joint deployment capabilities must be able to deliver forces and sustainment assets worldwide with the capacity to support rapid force maneuver, regeneration, reconstitution and redeployment. Sustainment capabilities depend upon early deploying logistics organizations with tailored logistics support packages generated, assessed and sourced from military or commercial inventories.

FL.1.4 *What are the consequences of failure to sustain forces during a campaign?* Failure to generate and sustain forces during a campaign may result from inadequate logistical planning or from ex-

tending operational reach beyond the capability of the sustainment structure.

FL.1.5 How does the joint force command and control sustainment activities? The command and control of force sustainment is a function of supply chain visibility and collaboration that enables the joint force to synchronize, prioritize, direct, redirect, integrate and coordinate common-user and cross-Service logistics commodities and support functions.

FL.2. What are the effects of deployment on the campaign? Planning decisions made in the sequencing, timing, routes, security measures and other factors, as well as adjustments made during the deployment affect not only the initial posturing of force in theater, but also employment options for the remainder of the campaign.

FL.2.1 How do national-level decisions affect protracted land, sea and air operations? Examples of these decisions and actions include diplomatic efforts to attain basing and overflight rights, pre-conflict infiltration of special operations forces, the choice of timing of the campaign and the assignment of priorities between theaters.

FL.2.2 How does the joint force deploy initial-entry and follow-on forces to a theater of operations? Forces may be deployed over strategic or operational distances direct to the objective or to an intermediate staging area.

FL.2.3 How does the deployment posture the joint force for the conduct of the campaign? What operational options are not available to the joint force as a result of deployment?

FL.2.4 How does the joint force adjust to deployment-induced limitations? The decision to commence operations may precede closure and integration of all deploying forces; in fact, important force enablers may not have arrived in the theater of operations. How does the state of the force flow affect operations?

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