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Improving Combat Support Analyses to Better Inform Decisionmaking

INSIGHTS FROM RAND RESEARCH

RAND PROJECT AIR FORCE

The 2022 National Defense Strategy stresses that U.S. force posture will "focus on the access and warfighting requirements that enable our efforts to deter . . . aggression against vital U.S. national issues, and to prevail in conflict if deterrence fails." In contested environments, U.S. forces must be able to fight through potential adversary attacks on air bases, supply chains, and communications systems.

To operate in contested environments, the combat support network must be postured in a manner that enables the agility of combat forces while increasing the resiliency of forces against potential adversary attacks. To achieve this effect, senior leaders in the U.S. Air Force (USAF) need enhanced combat support analyses—both for logistics and sustainment—that show the effectiveness, costs, and risks of force employment, development, and design decisions to inform USAF decisionmaking. Since its inception, Project AIR FORCE (PAF) has conducted combat support analyses to support USAF decisionmaking. This portfolio of work, which reflects a long-term institutional perspective, encompasses enterprise-wide combat support analyses, vulnerability and resiliency analyses, posture and basing analyses, and research that explores how combat support requirements can be considered during the design phase of future systems. This document highlights unclassified examples of this research.

WHO WE ARE

The mission of Project AIR FORCE is to conduct objective analysis of issues of enduring concern to DAF leaders. Project AIR FORCE addresses these concerns from multiple vantage points, by way of four research programs: Strategy and Doctrine; Force Modernization and Employment; Resource Management; and Workforce, Development, and Health. This document highlights combat support analyses conducted for the USAF by the Resource Management Program.

HOW TO INTEGRATE ENTERPRISE-WIDE COMBAT SUPPORT ANALYSES INTO DECISIONMAKING

PAF research has shown that effectively integrating combat support analyses into operational decisionmaking requires an analytic approach that meets some specific criteria. First, the results of logistics analysis need to be communicated in operationally relevant terms and metrics. Second, the analytic framework must have a mechanism to tie logistics system performance to operational performance. This mechanism would flag potential areas of concern where logistics shortfalls—either in availability or timeliness, for example—could affect operational performance. Finally, the analysis of logistics requirements should cover the full time horizon of operational decisionmaking, encompassing force employment, force development, and force design. The following PAF reports are examples of foundational analyses that provide a framework for effective combat support analysis and for integrating that analysis into operational decisionmaking.

Supporting Expeditionary Aerospace Forces: An Operational Architecture for Combat Support Execution Planning and Control

2002, MR-1536-AF, www.rand.org/t/MR1536

This report provides a critical analysis of the architecture for combat support execution planning and control. It proposes an architecture that would allow the combat support community to quickly estimate combat support requirements and to assess the feasibility of operational and support plans.

Supporting Air and Space Expeditionary Forces: Expanded Operational Architecture for Combat Support Execution Planning and Control

2006, MG-316-AF, www.rand.org/t/MG316

This report looks at the operational architecture for incorporating combat support command and control and proposes an expanded version of an architecture for the future.

Combat Support Execution Planning and Control: An Assessment of Initial Implementations in Air Force Exercises

2009, TR-356-AF, www.rand.org/t/TR356

Two command post exercises in 2004 offered an operational environment in which to observe USAF combat support execution planning and control activities. This report outlines areas, such as organizational structure, systems and tools, and training and education, in which a proposed future architecture for combat support execution planning and control could improve productivity and enhance decisionmaking.

Improving Air Force Command and Control Through Enhanced Agile Combat Support Planning, Execution, Monitoring, and Control Processes

2012, MG-1070-AF, www.rand.org/t/MG1070

This report examines agile combat support process gaps and recommends implementation strategies to facilitate the changes needed to improve USAF combat support execution planning and control through agile combat support, planning, execution, monitoring, and control processes.

Implementation Actions for Improving Air Force Command and Control Through Enhanced Agile Combat Support Planning, Execution, Monitoring, and Control Processes

2014, RR-259-AF, www.rand.org/t/RR259

In addition to highlighting implementation actions for the analytical framework, this report presents insight garnered from the Agile Logistics Experiment, which evaluated the analytical approaches and methods suggested in prior research.

The Line Between Disorder and Order: Reflections on RAND's Role in the Evolution of Air Force Logistics Thought and Practice

2020, RR-3131-AF, www.rand.org/t/RR3131

This report documents the history of the interactions between RAND logistics researchers and USAF leaders over more than 40 years to inform decisions involving logistics planning, programming, and budgeting and to develop, maintain, and evolve an approach for improving the USAF logistics system.

An Operational Architecture for Improving Air Force Command and Control Through Enhanced Agile Combat Support Planning, Execution, Monitoring, and Control Processes

2014, RR-261-AF, www.rand.org/t/RR261

This report describes how enhanced agile combat support planning, execution, monitoring, and control processes could be integrated with operational-level and strategic-level command and control processes to provide senior leaders with enterprise-wide agile combat support capability and constraint information.

A Conceptual Framework for More Effectively Integrating Combat Support Capabilities and Constraints into Contingency Planning and Execution

2015, RR-1025-AF, www.rand.org/t/RR1025

This report describes a conceptual framework for better integrating combat support capabilities and constraints into contingency planning and execution at the global, combatant command, component, and wing levels.

EFFECTIVE COMBAT SUPPORT ANALYSIS CAN INFORM KEY OPERATIONAL DECISIONS

RAND researchers have demonstrated the value of combat support analysis to support operational decision-making over the near-, middle-, and long-term time horizons. This research has helped inform USAF decision-making in two key areas: (1) vulnerability and resilience and (2) resource allocation. The following sections highlight reports in both of these areas.

Vulnerability and Resiliency Analyses

Dozens of studies have focused on identifying vulnerabilities of USAF operations to potential adversary attacks on air bases in the Indo-Pacific, Europe, and Middle East, including those using the Combat Operations in Denied Environments (CODE) analytic framework, developed by PAF. The results of these analyses have led to various investments to improve the resiliency of U.S. forces to adversary attacks.

Project AIR FORCE Modeling Capabilities for Support of Operations in Denied Environments

2015, RR-427-AF, www.rand.org/t/RR427

This report documents a framework for evaluating combat support requirements, basing posture vulnerabilities, operational resilience, and mitigation strategies to support combat operations in a denied environment. Analysts can assess combat support design vulnerabilities against attacks by near-peer or regional powers.

Air Base Attacks and Defensive Counters: Historical Lessons and Future Challenges

2015, RR-968-AF, www.rand.org/t/RR968

This report summarizes the impacts of the anti-access problem on air-base operations. It includes a historical perspective of air-base attacks and discusses how emerging threats will challenge U.S. air-base operations.

Operational Imperative: Investing Wisely to Bolster U.S. Air Bases Against Chinese and Russian Attacks

2023, PE-A1996-1, www.rand.org/t/PEA1996-1

In this Perspective, the authors synthesize past RAND research on Chinese and Russian missile threats to U.S. overseas air bases and discuss how the USAF can cost-effectively counter these threats.

Combat Support Resource Allocation Analyses

RAND analyses have assessed the balance among the combat support resources required to open and sustain combat operations, including security forces, communications, civil engineering, medical, housekeeping, and flight line support. These analyses have identified what resources most limit capabilities to support operational plans.

Balancing Agile Combat Support Manpower to Better Meet the Future Security Environment

2014, RR-337-AF, www.rand.org/t/RR337

This report proposes new metrics to measure expeditionary agile combat support capacity and uses these metrics to assess the capacity of the current agile combat support manpower mix to support expeditionary operations, finding that there are imbalances among its career fields relative to expeditionary demands.

Estimating Air Force Deployment Requirements for Lean Force Packages: A Methodology and Decision Support Tool Prototype

2017, RR-1855-AF, www.rand.org/t/RR1855

This report describes a methodology and tool prototype—the Lean Strategic Tool for the Analysis of Required Transportation—that can help analysts explore trade-offs among capability (or risk), speed, and cost to create force packages for deployment, particularly in contested, degraded, and operationally limited environments.

Analysis of Global Management of Air Force War Reserve Materiel to Support Operations in Contested and Degraded Environments

2021, RR-3081-AF, www.rand.org/t/RR3081

In this report, the authors evaluate management approaches and global prepositioning strategies for war reserve materiel, which may help mitigate some of the U.S. military's vulnerabilities when operating in a contested environment.

Working with Us

WHAT WE DELIVER

RAND Project AIR FORCE's (PAF's) studies and analyses are tailored to the needs of the sponsor. Generally, PAF provides

- continuous interaction with PAF subject-matter experts throughout the project
- accessible, timely, and policy-focused reports that address senior leader concerns and recommend courses of action
- descriptive, transparent, and rigorous supporting materials that describe the project's methodology and support the project's conclusions
- as appropriate, additional outreach materials to help socialize the work to other interested stakeholders, such as the DAF, the U.S. Department of Defense, Congress, or the public.

SPONSOR IDENTIFICATION

All PAF research projects must be sponsored by a USAF general officer (GO) or member of the senior executive service (SES). Most sponsors assign one or more action officers (AOs) to manage the technical and administrative aspects of their PAF projects.

LINES OF FUNDING

DAF organizations can initiate a PAF research project in two ways:

1. **Centrally Funded** (also referred to as "core projects"). Air Force Studies, Analyses, and Assessments (SAF/SA; formerly HAF/A9) employs a rigorous, iterative, GO/SES voting process to select projects for inclusion in its annual research plan. This process accounts for about 70 percent of the projects that PAF will conduct during a fiscal year. Funding for these projects is part of a line item in the congressional budget and is awarded through the competitive selection process. Project topics are submitted in January, and the research plan is approved by a steering group consisting of three- and four-star GOs between June and July. Maintaining a balance of projects across the DAF and the four PAF programs is key to this selection process.
2. **Sponsor-Funded** (also referred to as "add-on projects" because they are add-ons to the core research agenda). This process accounts for about 30 percent of the projects that PAF will conduct during a fiscal year. Funding for these projects comes directly from the organization requesting the research and does not require a competitive selection process because the requesting organization is paying for the research (and not competing with others). DAF sponsors may initiate a PAF add-on research project at any time of the year by requesting the work, submitting required documentation, and transmitting organizational funds. Ideas and requests for PAF add-on projects may originate from a variety of circumstances (e.g., continuation of prior PAF work or new challenges). To initiate the process, a sponsor or AO typically contacts the appropriate PAF program director or subject-matter expert. The timeline of add-on projects is flexible.

PAF also supports DAF organizations in many informal ways. To request RAND research reports highlighted here or to discuss pressing DAF challenges, contact the director of PAF's Resource Management Program at www.rand.org/paf/about/pafmanagement.

RAND Project AIR FORCE (PAF), a division of the RAND Corporation, is the Department of the Air Force's (DAF's) federally funded research and development center for studies and analyses, supporting both the United States Air Force and the United States Space Force. PAF provides the DAF with independent analyses of policy alternatives affecting the development, employment, combat readiness, and support of current and future air, space, and cyber forces. Research is conducted in four programs: Strategy and Doctrine; Force Modernization and Employment; Resource Management; and Workforce, Development, and Health. The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND® is a registered trademark. © 2023 RAND Corporation.

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