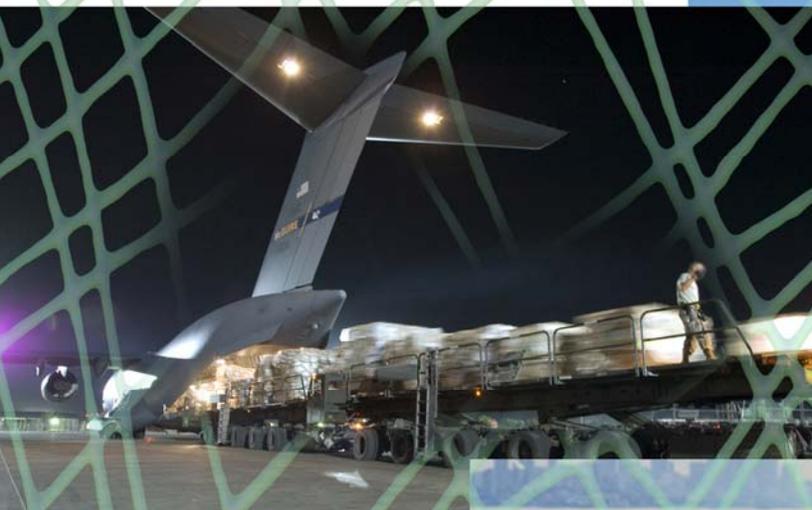


EXECUTIVE SUMMARY



MOBILITY capabilities & requirements STUDY



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**Mobility Capabilities and Requirements Study 2016
(MCRS-16)**

Approved:



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MCRS-16 Executive Summary

Introduction

A. The National Military Strategy (NMS) has continued to evolve since the Department of Defense (DOD) conducted its last comprehensive mobility study, the Mobility Capabilities Study (MCS), in 2005. Although the ability to prosecute two nearly simultaneous conventional campaigns remains a cornerstone of U.S. defense, the current strategy places increased emphasis on Irregular Warfare, Stabilization Operations, and DOD support to Homeland Defense (HLD). Furthermore, the current strategy recognizes the reality of long-term U.S. involvement in globally dispersed operations which may include lengthy commitments to major campaigns.

B. In addition to the refinement of U.S. strategic priorities, important fact-of-life changes have occurred since the MCS was completed that place new demands on the mobility system. These changes include a higher level of engagement around the world, increased reliance on the Reserve Components, increased reliance on airlift to move equipment and supplies that were once moved almost exclusively via surface transport, the introduction of new specialized equipment (e.g., Mine Resistant Ambush Protected vehicles), the continued growth of Special Operations Forces, the establishment of United States Africa Command, and the increase in Army and Marine Corps end strength.

C. In response to these changes, the DOD has made informed investment decisions designed to maintain the right mix of strategic and intra-theater transportation capabilities. Examples of recent investments in DOD's strategic capabilities include completion of C-17 procurement, ongoing C-5 modernization, and planned KC-135 recapitalization. Investments in DOD's theater capabilities include ongoing procurement of C-130J aircraft to recapitalize the Air Force's aging C-130 fleet, ongoing procurement of the C-27 Joint Cargo Aircraft to move Army time-sensitive, mission-critical cargo, ongoing procurement of Joint High Speed Vessels to improve the ability to rapidly reposition forces and equipment within an area of operations, and the development of a precision airdrop system. Additionally, the Department continues to invest in modernization programs, such as C-130 avionics and the Joint Precision Approach and Landing System.

D. In order to provide an updated, comprehensive assessment of the Department's mobility system, one which could be used to inform the 2010 Quadrennial Defense Review (QDR), the Secretary of Defense directed the United States Transportation Command and the Office of the Secretary of Defense, Program Analysis and Evaluation¹, "...in coordination with DOD components [to] conduct a mobility study to identify mobility capabilities and requirements needed to support the defense strategy." The Mobility Capabilities and Requirements Study 2016 (MCRS) is the fifth comprehensive mobility study conducted by the DOD, and the second mobility study conducted since 9/11.

¹ Now known as Cost Assessment & Program Evaluation (CAPE)

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E. MCRS is a joint, collaborative study designed to conduct a detailed analysis of the major components of the NMS, which included steady-state operations, lesser contingencies, homeland defense, and major surge campaigns. Participants included the Services, Combatants Commands, the Joint Staff, the Defense Logistics Agency, and the Maritime Administration of the Department of Transportation. This executive summary provides an unclassified overview of the objectives, scope, methodology, and major insights of the MCRS. The classified report provides a detailed explanation of the study and its results. Additional information concerning analytic models, and the study's validation and verification process, as well as all data used in this study, are available upon request.

Objectives

The objectives of MCRS were to determine the mobility capabilities and requirements needed to deploy, employ, sustain and redeploy joint forces in support of the NMS in the 2016 timeframe; to determine capability gaps/overlaps associated with the programmed mobility force structure; and to provide insights and recommendations to support the QDR and decisions regarding mobility programs.

Scope

A. The study used approved DOD planning scenarios to develop and analyze three separate cases designed to provide senior leaders with a detailed understanding of the range of mobility capabilities needed to support different levels of demand based on different possible future strategic environments. All cases assessed mobility demands over a notional seven-year period.

B. The study assessed the major components of the mobility system required to move forces from point of origin to point of effect and to sustain those forces in the 2016 timeframe using the programmed force in the 2009 President's Budget (PB09), updated to include pertinent decisions made during the formulation of the 2010 President's Budget (PB10). The components of the mobility system assessed in this study include airlift, aerial refueling, sealift, surface transportation, ashore and afloat prepositioning, forward stationing, and infrastructure.

C. The study also examined how changes in the mobility system impact the outcomes of major operations, and assessed the associated risks and/or benefits of these changes.

(U) Methodology

A. MCRS used the Department's suite of approved mobility models to support analysis of the following stages of deployment.

- CONUS deployment: Units and materiel deploy from initial positions (forts, air bases, sea bases, reserve mobilization stations, and depots) to air- and sea ports of embarkation.

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- Inter-theater deployment: Strategic assets (aircraft and ships) transport personnel, equipment, and stocks to ports of debarkation.
- Intra-theater deployment: Theater assets (trucks, rail systems, watercraft, and aircraft) deploy units, and sustainment to tactical assembly areas, air bases, and battlefield locations.
- In addition, the aerial refueling assessment included employment analysis.

B. MCRS developed three cases to evaluate a broad spectrum of military operations which are linked to notional strategic environments that could be used to inform the QDR and support possible decisions regarding future mobility force structure.

- **Case 1:** U.S. forces conduct two nearly simultaneous large-scale land campaigns, and respond to three nearly simultaneous HLD consequence management events with corresponding aerospace control levels (ACLs) and maritime awareness presence levels, which take place concurrent with the land campaigns.
- **Case 2:** U.S. forces conduct a major air/naval campaign concurrent with the response to a large asymmetric campaign and respond to a significant HLD consequence management event with corresponding ACLs and maritime awareness presence levels. This case includes scenarios and operations that are part of the QDR Security Environment.
- **Case 3:** U.S. forces conduct a large land campaign against the backdrop of an ongoing long-term irregular warfare campaign. The case includes three nearly simultaneous HLD consequence management events with corresponding ACLs and maritime awareness presence levels.

C. The study assessed the mobility system's performance by examining how force closures supported achievement of U.S. campaign objectives. This was done by assessing required delivery timelines and a comprehensive set of campaign risk metrics to determine whether available forces met war fight objectives within desired timelines.

D. The study used Service-provided force deployment data for each scenario, developed corresponding logistics concepts of operation to ensure the scenarios were logistically supportable, and developed time-phased force deployment data, which included sustainment requirements, to prescribe the delivery profiles for forces deploying to a given scenario. MCRS also used current data from the Mobility Planning Factor Database, which covers the physical and operational characteristics of organic and commercial air, sea, and land mobility platforms; and the characteristics and capabilities of mobility infrastructure.

Key Assumptions

Key assumptions underlying the analysis are identified below.

- MCRS used PB09 as the Program of Record (with appropriate PB10 adjustments).
- Non-mobility forces, i.e., combat and support forces, will not exceed programmed levels.

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- Defense Planning Scenario (DPS) guidance² is in effect. U.S. forces must be prepared to support:
 - Two nearly simultaneous conventional campaigns
 - Or, one conventional campaign, if engaged in a long-duration irregular warfare campaign
 - Plus, up to three nearly simultaneous domestic events
 - Plus, ongoing steady state operations
- Force development planning assumptions are in effect
- Scenario assumptions, as defined in approved DPS, Multi-Service Force Deployments, and Analytical Baselines, are in effect

Overall Assessment

A. With few exceptions, MCRS found the Department's planned mobility capabilities sufficient to support the most demanding projected requirements. Inter- and intra-theater airlift capabilities, surge sealift, pre-positioning and CONUS transportation assets are largely satisfactory. In general, the lack of foreign infrastructure required to support major force deployments remains the fundamental constraint when attempting to reduce deployment timelines in support of U.S. objectives. Procurement of additional airlift, sealift, and prepositioned assets by itself will not overcome this reality. The Department should continue to explore strategies that seek to mitigate the adverse impacts of infrastructure constraints by reducing reliance on destination infrastructure wherever possible. Additionally, continued focus on flexible multi-modal nodes and capabilities that facilitate adaptable transportation networks may produce increased velocity and throughput.

B. The percent of available system capacity used to meet the demands of each case is summarized in Figure 1.

C. The capacity of the Department's strategic airlift fleet exceeds the peak demand in each of the three MCRS cases. The programmed strategic airlift fleet, which consists of 223 C-17s and 111 C-5s, provides a capacity of 35.9 million ton-miles per day (MTM/D). The peak for MCRS Case 1, which represents the highest level of modeled strategic airlift demand, required 32.7 MTM/D. Case 2 required 30.7 MTM/D, and Case 3 required 29.1 MTM/D.

D. MCRS determined that the peak demand for strategic lift occurs during the deployment phase of a major warfight and, more specifically, during the deployment to the second of two nearly simultaneous warfights. The requirement for the delivery of over- and outsized (O&O) equipment early in warfights drives this peak demand. Additionally, MCRS found that the peak demand for strategic airlift and intra-theater airlift are not concurrent. The demand for strategic airlift is at its highest during the deployment of forces. The demand for intra-theater airlift is at its highest after the majority of the forces are deployed; thus, C-17s can

² Defense Planning Scenario: Steady State Security Postures/Integrated Security Postures, dated 18 Apr 2008.

be used to support intra-theater missions without adding to the peak demand for C-17s. Both insights are consistent with findings from previous mobility studies.

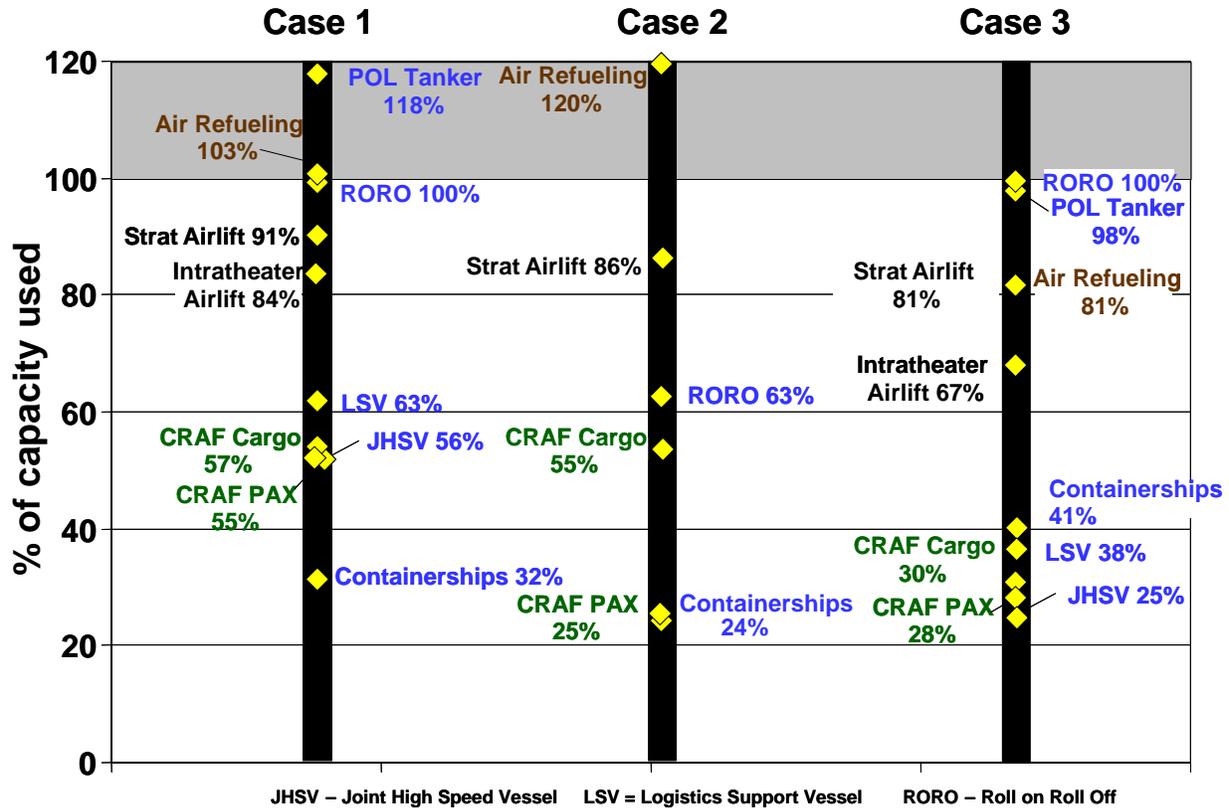


Figure 1: (U) Mobility System Utilization by MCRS Case

E. The peak airlift requirement in support of HLD consisted of a relatively small number of dedicated aircraft (a combination of 12 DOD aircraft and 36 commercial). These aircraft were needed to ensure Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive Consequence Management Response Force units could meet their required delivery dates. The analysis shows the use of additional DOD airlift assets does not improve overall force closure. This is because ground transportation provides the best rate of closure -- more than 10 times the rate of airlift -- when moving significant forces and large amounts of equipment from dispersed locations in response to major HLD events. The CONUS road network and commercial truck fleet – including over two million trucks for hire – have significant capacity that outstrips the throughput capacity of airlift.

F. Because the movement of O&O equipment early in the warfight drives the demand for strategic airlift, the recent addition of ground force end strength to provide a larger rotational pool of forces to sustain long-duration stability operations does not impact the peak demand for strategic airlift. MCRS also found that variations in basing had little impact on the peak demand for strategic airlift.

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G. DOD relies on the Civil Reserve Air Fleet (CRAF) as the primary means of delivering passengers and bulk air cargo. Projected CRAF cargo capacity is significant, and greatly exceeds the requirements for all MCRS cases.

H. The intra-theater airlift analysis included C-130s, C-17s and C-27s. The programmed fleet of 401 C-130s exceeds the peak demand in each of the three MCRS cases. The highest C-130 demand occurred in Case 1, which required 335 aircraft³. The peak aircraft demand in each case occurs during surge airdrop/airland operations. However, based on current total force planning objectives, the C-130 crew force structure cannot sustain steady state operations in combination with a long duration irregular warfare campaign.⁴ C-27s were used to support the Army's requirement for the movement of time-sensitive, mission critical cargo. They were deployed to each major combat operation and the irregular warfare campaign, as specified by the Army, although no specific assessment of the direct support missions was conducted. C-27s provide some improvement in airfield access over C-130 aircraft.

I. The current tanker inventory consists of 474 USAF aircraft (415 KC-135s/59 KC-10s) and 79 USMC KC-130s. This inventory does not satisfy the peak demands of two of the three cases assessed. The demand ranged from a low of 383 KC-10s/KC-135R-equivalents and 66 KC-130s to a high of 567 KC-10s/KC-135R-equivalents and 79 KC-130s. However, a modernized fleet would require fewer aircraft to meet the same demand (lower depot/greater capability).

J. En route infrastructure is sufficient in all theaters to support the fuel requirements for deploying and sustaining the force.

K. Sealift is the primary means for delivering large ground forces and is essential to building up combat power required to seize the initiative in major ground operations. MCRS moved approximately 90% of all cargo by sealift.

L. The available sealift fleet of organic, commercial, alliance, and effective U.S. controlled roll-on/roll-off ships and containerships was sufficient to meet the military objectives of the most demanding MCRS case – with no appreciable reserve in two of the three cases and some operational delays. Maintaining viable Department capacity is critical given there are only 276 Roll-on/Roll-off ships worldwide, of which 92 are US-flag or Effective U.S. Control. While demand slightly exceeded projected U.S. and allied Petroleum, Oil, Lubricants tanker capacity, the study noted that this could be easily mitigated by gaining access to the 1,980 useful tankers available globally, 254 of which are owned by North Atlantic Treaty Organization countries.⁵

M. Prepositioned assets provide operational and strategic flexibility. Programmed prepositioned assets were sufficient to meet the most demanding MCRS case. In fact, for the specific scenarios/warfight assessed, the majority of ground combat components of the currently programmed afloat prepositioned sets were not used until well after sealift closure from the CONUS. However, the afloat prepositioned port opening, theater opening, and logistics packages were essential to rapidly closing the force. MCRS did not determine whether there would be any

³ Direct support mission was not assessed. C-130s may be required to supplement C-27s to support this mission.

⁴ Per 17 Jan 2007 Secretary of Defense Memorandum, Subject: Use of the Total Force.

⁵ Based on summer 2009 market figures.

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detrimental effects or unintended consequences associated with eliminating currently programmed prepositioned sets. Rather, it suggests an opportunity to reevaluate the concept of employment and mix of afloat prepositioned equipment across the full range of military operations to include scenarios/warfighting that were not assessed and that would include new technology such as selective offload and at-sea transfer.

N. The programmed CONUS infrastructure is sufficient to meet the most demanding MCRS case.

O. Joint Logistics Over the Shore assets and Joint High Speed Vessels are critical enablers for deployment and sustainment and are sufficient to support the most demanding MCRS case. A single Offshore Petroleum Discharge System is insufficient to meet the demands of two overlapping land campaigns. Even with a full complement of enablers, infrastructure constrained areas of responsibility, such as those in Africa, will limit the ability to deploy and sustain forces and will continue to require mitigation strategies.