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It's Time to Invest: Enhancing Current and Future U.S. Air Force Airlift

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**“The balanced air force will always, therefore,
possess a large fleet of cargo and transport planes.”**

Lt Gen Henry H. Arnold and Maj Gen Ira C. Eaker
Winged Warfare, 1941



America Faces an Airlift Problem

The current U.S. airlift system lacks the capacity and does not have the right mix of mobility aircraft to deliver and sustain space, air, and surface combat forces in a future conflict against a peer competitor in a contested environment.

The Air Force airlift inventory is not sized or balanced for the kinds of large-scale wars the United States likely will face in the future



General State of the Fleet

The nation's airlift inventory appears large, but only a fraction of it is focused upon Combatant Commander demand.

- *USAF—550 transports*
- *Civil Reserve Air Fleet—450 airliners*

*These are the
main airlift
assets available
to a COCOM*

- *Navy—17 C-40s + 27 KC-130s*
- *Marines—60+ C-130Js + about 200 heavy + 200 utility rotary wing*
- *Army—500+ CH-47s, + about 2,000 UH-60 rotary wing*

*Service organic
fleets focused on
the needs of
owning services*

USAF and CRAF aircraft are THE source of common-user support for the entire DOW

Other service assets mainly address organic requirements



More Demand, Less Capacity

Aircraft (Number/Average Age)	1989	2025
C-5	79 (9)*	52 (37)
C-141	263 (22)*	--
C-130	697 (21)*	277 (21)
C-17	--	222 (21)
Total Airframes (Average Age)	1,039 (20)	551 (23)

**modernization and replacement programs underway for still-healthy aircraft. This is a necessity, since aging planes tend to be less reliable and expensive to maintain due to years of heavy wear and tear. An older fleet is subject to fleet-wide and prolonged groundings.*

Airmen are doing a lot more with half the airlifters



The Fleet Faces Increasing Demands

- Steady global commitments persist
- Reduced forward-deployed forces face BIG and possibly concurrent strategic threats
- Greater Pacific distances reduce throughput—longer sorties in EUCCOM vs CENTCOM
- Increased likelihood of concurrent logistics demands in different theaters, including in the homeland
- Higher likelihood that air logistics will come under attack from the homeland to forward operating locations
- Growing need for mobility forces across the board—all services have adopted warfighting concepts dependent on rapid global deployments and constant maneuver in combat
 - USAF—Agile Combat Employment (ACE), logistics under attack
 - Army—expanded and continuous maneuver, Multi-Domain Task Forces
 - USMC—squadron forward arming and refueling points, Littoral Combat Regiments
 - USN—Distributed Maritime Operations, reduced port dependence

**Everyone needs airlift to fight—LOTS of it!
concurrently and particularly during early phases of most
contingencies**



The Fleet Faces Increasing Demands

- It takes a lot to move a joint force:
- Fighter Wing:
 - A few dozen C-17s at an established base.
 - Hundreds of C-17s to set up an expeditionary base with minimal facilities, logistics, and protection.
- Stryker Battalion Task Force:
 - 50-60 C-17 sorties + many more to bring in normal support echelons.



Patriot Air Defense Units:

- A single Patriot battery requires seven C-17 sorties.
- Entire Patriot battalion (six batteries) takes 73–128 C-17 sorties.

Extreme example: 1999 Task Force Hawk required **500 C-17 sorties to deploy two battalions of Apache helicopters** into Albania: ultimately 22,000 tons of materiel and 5,350 troops. From an airlift perspective, the Army has no “light” units, only heavy and incredibly heavy ones.



Persistent Shortfalls Increase Risks



Size matters: C-130 training fuselage loading into a C-5—varying sizes of mobility aircraft offer challenges and opportunities, depending on missions *(USAF, Air National Guard)*

Shortfall

- The Air Force airlift fleet capacity is too small.
- Is not optimized to accommodate factors regarding:
 - Aircraft size relative to payloads.
 - Ability to access a range of airfields.
 - Austerity conditions.
 - Logistics under attack.

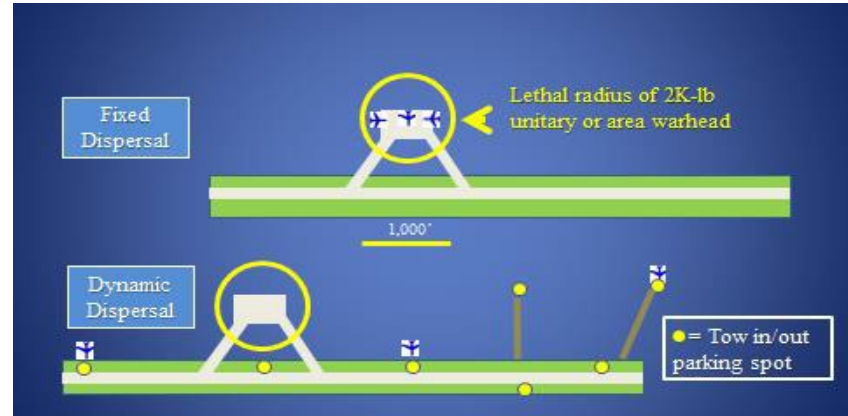
Impact

- Reduced throughputs.
- Inefficient transfers of cargos at intertheater transfer points.
- Reduced ability to move essential equipment forward.
- Delayed force closures impeding coordinated, properly sequenced joint ops.
- Higher fleet life-cycle costs.
- Attrition when under attack.

Current fleet falls short in providing high throughputs throughout AORs



Persistent Shortfalls Increase Risks



Legacy logistics operations are highly predictable for U.S. adversaries. In concepts like "Dynamic Dispersal," bases shift frequently and aircraft on the ground are repositioned hourly (see Project Ivory Soap)

Shortfall

- The airlift community is not sufficiently scaled, organized, and equipped for agile combat employment.
 - ACE is a key concept required to execute survivable combat operations in peer threat environments.
 - Forces spend too much time at known locations or bases and operate in known patterns.

Impact

- Predictably = increased vulnerability and reduced throughputs
- Increased predictability in the air and on the ground.
- Increased force attrition and decreased throughput.
- Burdens fleet with the necessity of "agile disaggregation" and protection of ALL operational and support echelons, anywhere and always.

The current fleet isn't optimized to provide high cargo throughputs forward in peer conflict threat environments



Persistent Shortfalls Increase Risks



Information Age Basics: airlifters need data link control terminals integrated with aircraft communications systems, allowing high-volume and secure data transfers. *(Air Force)*

Shortfall

- Few airlift aircraft have robust suites of secure communications and data links to provide crews with comprehensive situational awareness and protected access to command centers.

Impact

- Decreased communications and situational awareness increases risk and decreases efficiency
- Crews flying blind—no real-time visibility of threats or opportunities.
- Commanders do not have agile contact with forces limiting ability to dynamically re-task mobility assets.

Enhanced connectivity crucial to provide airlift crews with situational awareness necessary to complete their missions and survive



Recommendations

Near-Term Enhancements:

1. Modernize C3ISR connectivity for all airlift aircraft.
2. Refill sustainment stocks to increase readiness and capacity.
3. Review growing CRAF and other public-private partnerships.
 - a) Current share of commercial fleet is about 7%
 - b) Share in the 1960s about 15%

{ Room for Growth?

Long-Term Solutions:

1. Begin process of recapitalizing the fleet with aircraft **designed** to service its **two core missions** and survive under contested conditions.
 - a) Inter-theater: Good balance of maximal capacity, outsize cargo, global range/payload, operations into typical regional and major airfields
 - b) Intra-theater: Good balance of capacity to link well with big planes, outsize cargo, theater range/payload, aggressive airfield agility

We are very late to game on this—the time to start was a few decades ago, so let's start pushing hard now!



Readings

- To learn more about the airlift challenge, suggested readings:
 - *Launching the Workhorse: Vertical or Super-Short Takeoff Capabilities for the Next Theater Airlift Aircraft* (Maxwell AFB, AL: Air Force Research Institute, May 2019).
 - *Shaping Air Mobility Forces for Future Relevance* (Maxwell AFB, AL: Air Force Research Institute, March 2017).
 - “Theater Airlift Modernization: Options for Closing the Gap,” *Joint Force Quarterly*, October 2014.
 - *Airlift Requirements in the Asia-Pacific, 2020 and Beyond*, Air Force Research Institute, 2013.



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