RESEARCH SUMMARY

The People's Liberation Army's Approach to Manned-Unmanned Teaming

Theory and Practice

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As the U.S. Department of the Air Force (DAF) accelerates its testing of manned-unmanned teaming (MUM-T) concepts and further integrates the Collaborative Combat Aircraft (CCA) program into operations against highly capable adversaries, it is critical for U.S. Department of Defense (DoD) and DAF planners, strategists, and analysts to better understand Chinese perspectives and similar lines of effort to integrate autonomous systems into air operations. Insights into China's MUM-T capabilities can inform the DAF's operational planning, enhance interoperability with allied forces, and guide investment in relevant technologies. Additionally, understanding China's approach to MUM-T can help the DAF anticipate and counter adversarial tactics, ensuring that U.S. forces maintain a strategic advantage in the foreseeable future.

APPROACH

For this study, I relied on open-source Chinese-language publications to analyze China's defense community's perspectives regarding technologies in air combat. This information helped me identify key stakeholders and advocates for MUM-T within China's military-industrial complex, and I investigated the following research questions:

- Is the People's Liberation Army (PLA) planning to integrate MUM-T and counterstrategies into its own development of concepts of operations? How does it plan to do that?
- How does the PLA perceive the DAF's emphasis on MUM-T as a defining feature of future combat capability?
- More broadly, what do we know about the PLA's perspective on the man-machine relationship and the role of autonomous systems in warfare?

continued

KEY FINDINGS

- The PLA assesses that MUM-T will be a defining feature of future combat activities involving intelligent systems and is in the nascent stages of developing operational concepts to integrate MUM-T into its existing doctrine.
- Since 2015, the PLA has monitored developments in U.S. MUM-T concepts and technologies to identify U.S. vulnerabilities and develop countermeasures.
- As of early 2025, the PLA appears to be taking a different approach to MUM-T than the U.S. Air Force, focusing more on enhancing software and algorithms to enable unmanned systems to support and augment manned platforms. While both militaries prioritize cost-effective CCA-type capabilities, the PLA emphasizes augmentation over advanced teaming, which demands greater autonomy for unmanned systems.
- PLA writings emphasize the importance of reinforcing political control under manned-unmanned collaborative combat conditions. Finding the right balance between autonomation and political control likely will remain a challenge in the near future.

RECOMMENDATIONS

Although the U.S. integration of MUM-T into the development of future operational concepts remains at a preliminary stage, it is the right time for the United States to adopt a competitive strategy to ensure that the DAF maintains its technological and conceptual advantages. On the basis of the initial findings of this report, what follows are policy recommendations for DoD and the DAF to consider:

- DoD and the DAF should leverage red-teaming analysis to develop tailored strategic messaging around the U.S. research, development, and acquisition of MUM-T capabilities.
- The DAF should use MUM-T and CCA development as a case to inject "conceal and reveal" strategies into capability development.
- The PLA is poised to accelerate its adoption and integration of more autonomous systems into military operations in the next decade. Accordingly, in addition to platform capabilities, the DAF should direct relevant intelligence components to focus on analysis of PLA organization, doctrine, and training in assessments of PLA MUM-T capabilities.
- DoD and the DAF should make a concerted and targeted effort to significantly boost protection of the electromagnetic spectrum. Electromagnetic warfare collaboration with allied and partner militaries and defense industrial bases should be expanded.
- As the DAF stands up the Integrated Capabilities Command, it should also ensure that its intelligence cell— augmented by China specialists—actively monitor, analyze, and inform the command's acquisition activities on the PLA's electromagnetic warfare and information warfare capabilities.
- The DAF should better understand the PLA's insecurity about political control under complex combat conditions, which are increasingly shaped by artificial intelligence and unmanned systems, to develop tailored concepts of employment for CCA.

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