Contents

1. Countering Unmanned Aerial Systems (UAS) on the future battlefield..........................................................3
2. Providing internet in denied areas to enable ARSOF to wield influence. ......................................................3
3. Assessing the use of autonomous systems in the future operating environment.............................................4
4. Tailoring ARSOF logistics manning requirements to properly sustain critical, rotational, enduring operations. .................................................................................................................................4
5. Maintaining ARSOF’s freedom of maneuver in the cyber domain.................................................................4
6. The impact of timing and pattern of ARSOF service on family stability.........................................................5
7. Measures of Effectiveness (MOE) for SOF Operations. ..................................................................................5
8. Safe-haven or other non-traditional forms of Unconventional Warfare (UW) as the new normal. 5
9. ARSOF support to USSOCOM in its emerging role as the global synchronizer of Countering Weapons of Mass Destruction (CWMD). .................................................................................................................5
10. Leveraging an ARSOF Indigenous Approach to support the Joint Force across the Range of Military Operations (ROMO).............................................................................................................6
11. Improving ARSOF’s ability to counter revisionist states in competition short of armed conflict. ...........................................................................................................................................................................6
12. Leveraging Additive Manufacturing (AM) to enable ARSOF Military Deception (MILDEC). ..............6
13. Leveraging Additive Manufacturing (AM) to provide Non-Standard Logistics in austere, politically sensitive, or denied environments. ..................................................................................................................7
14. Emerging and future use of Artificial Intelligence (AI) in support of Special Operations...........7
15. Potential emerging and/or disruptive technologies as the next strategic surprise. ...............................7
16. Improving ARSOF’s ability to lead or enable Military Support to Governance (MSG). ......................7
17. Revisionist states’ strategic indicators and warnings in competition short of armed conflict........8
The following list of research topics reflect CG, USASOC priority issues, in particular those best suited for academic study. These topics support the FY18 USASOC Campaign of Learning and were developed via an assessment of strategic guidance, the contemporary and future operating environment, current and projected knowledge shortfalls, current and projected capability shortfalls, and input from USASOC HQ staff and CSC/Us. These topics, developed annually and updated throughout the year as appropriate, inform USASOC internal analyses as well as nominations to the Rand and Army Study Programs, the U.S. Army War College Key Strategic Issues List (KSIL), Joint Professional Military Education (JPME) Topics, JSOU Research Topics List, ARSOF graduate student thesis topic selection, and other academic research. Results are spiraled into the USASOC Strategic Planning Process to inform strategic resourcing or future force development decisions or simply added to the enterprise wide body of knowledge. For any additional information on any of these topics, please contact the USASOC DCS G9 study coordinator, Mr. Damon Cussen at 910-396-0493 / damon.cussen@socom.mil or Mr. John (Brooke) Tannehill at 910-432-2328 / john.tannehill1@socom.mil.

1. **Countering Unmanned Aerial Systems (UAS) on the future battlefield.**
   - The increasing availability of UAS platforms to both state and non-state actors, commercially and otherwise, as well as technological advances in those systems, pose significant risk to ARSOF.
   - For example, in 2016, China demonstrated a swarm of 119 UASs operating via ad-hoc, self-healing networks. These networks leveraged Artificial Intelligence (AI) to provide collision avoidance and autonomous group control.
   - The proliferation of UAS on the future battlefield as well as the rise in number and type of payloads will make it increasingly difficult to obscure movement. If forces can be seen, they can also be targeted.
   - Additionally, unique utilization of UAS platforms has proven tactically effective in Russia’s campaign in Eastern Ukraine for such use as disposable (low resolution) surveillance, forward observation for indirect fire control, and “missiles” when laden with explosives.
   - What mobile, counter-UAS capabilities are available to (AR)SOF and the future joint force to mitigate the effects of singular or swarm UAS? [Top]

2. **Providing internet in denied areas to enable ARSOF to wield influence.**
   - In underdeveloped or denied areas, ARSOF requires internet access to reach foreign target audiences in support of efforts to inform, persuade, direct, deceive, confuse, and/or disrupt.
   - Towers, Unmanned Aerial Systems, airplanes, balloons, etc. are temporary options, but do not provide the persistence and depth required. Additionally, most mitigation options inappropriately present an attributable signature.
   - Some DoD initiatives underway include: the Joint Airborne Layer Network–Maritime (JALN-M), the Navy’s method to deliver mission-persistent connectivity without satellites; Navy Beyond Line-of-Sight (BLOS) networks, in particular the Battle Force Tactical Network (BFTN); and various commercial High Altitude, Long Endurance (HALE) UASs.
   - What options could be considered to provide ARSOF robust, assured internet access to foreign target audiences? [Top]
3. Assessing the use of autonomous systems in the future operating environment.

- Air and ground autonomous systems are increasingly common on today’s battlefield to provide logistics, neutralize Improvised Explosive Devices (IEDs), provide Intelligence, Surveillance and Reconnaissance (ISR), etc.
- How might ARSOF leverage autonomous capabilities in the future? Could they be used to open air or ground corridors for Joint Forcible Entry (JFE); for exfiltration of downed pilots or isolated Soldiers (Combat Search and Rescue), to carry heavy loads; etc.?
- Additionally, could Remotely Operated Systems (ROS) be leveraged to support Military Deception (MILDEC), such as to scatter false signs or transmit false electronic signals, etc.? Conceivable examples include ROS that: emit microwave signals to draw enemy anti-aircraft fire; emit false or weakly encrypted instructions behind enemy lines; leave blood drips, false footprints, debris, etc., to give the impression of recent, larger formations; deliver machine-gun fire at an “alternate” Direct Action (DA) location to draw the enemy away from the primary objective, etc.  

4. Tailoring ARSOF logistics manning requirements to properly sustain critical, rotational, enduring operations.

- ARSOF operational logistics requirements are increasing though the force is not currently able to rely on (doctrinally specified) support from Geographic Combatant Command / Army Service Component Command (GCC/ASC). There is no Combat Service Support (CSS) Battalion in the Special Operations Sustainment Brigade to conduct initial entry missions in support of crisis response or to reinforce the Group Support Battalion / Ranger Support Company (GSB/RSC) as reach-back support.
- Army Service-Provided capability has not proven sufficient in meeting ARSOF low volume, rapidly emerging support requirements. Current GFM mechanisms and existing authorities are insufficient.
- 22% of the Army’s logistics force structure is active duty, with the balance in compo 2 & 3. New concepts and authorities should be considered for improved and more responsive logistic tailoring for increasingly dispersed and emerging global SOF operations.
- How could the Total Force be better leveraged to provide responsive, tailored, sustained logistics support to globally dispersed ARSOF? 

5. Maintaining ARSOF’s freedom of maneuver in the cyber domain.

- Threat military and intelligence services possess increasingly sophisticated capabilities in the cyber domain.
- ARSOF’s increasing use, even reliance, upon the internet increases exposure to threat information technologies.
- Overtaxed cybersecurity resources and an accelerating threat tempo magnify these security challenges.
- How does ARSOF ensure information security and maintain freedom of maneuver in the cyber domain?
6. The impact of timing and pattern of ARSOF service on family stability.
   - Families have a significant impact on Soldier readiness.
   - No published studies have examined marital stability within ARSOF or focused on service timing as a potential factor in predicting marital stability.
   - How does timing and pattern of service in ARSOF for both operators and support personnel affect marital and family stability? With divorce as the dependent variable, what other independent variables positively or negatively affect ARSOF’s divorce rate?
   - Have family or marriage support programs had any positive effect on divorce rates? Top

   - It is difficult, if not impossible, to objectively quantify the relevance of SOF operations. How can ARSOF best measure success or failure when operations in the human domain do not lend themselves to easily quantifiable metrics?
   - Senior leaders have insufficient statically robust metrics when advocating for specific programs to senior leaders and policy makers. How do senior ARSOF leaders “prove” that SOF campaigning matters?
   - Can qualitative data, observed and collected from various social media domains and platforms, be converted into relevant, quantifiable data for measuring the effectiveness of SOF operations? Top

8. Safe-haven or other non-traditional forms of Unconventional Warfare (UW) as the new normal.
   - The proliferation of Anti Access Area Denial (A2AD) capabilities poses an extremely high risk to SOF personnel and missions; and in some cases, may render areas completely inaccessible. This is particularly relevant in the execution of UW which requires ARSOF to operate for extended periods of time in a denied or contested environments.
   - This, in conjunction with political sensitivities, reduces the probability that ARSOF will conduct “doctrinal,” multiyear, full-spectrum UW, though the training and education of ARSOF doesn’t reflect this new reality.
   - What options--such as Safe Haven UW, virtual UW, Support to Resistance, etc.,--may be more suitable strategic options given the contemporary and future operating environment? Top

9. ARSOF support to USSOCOM in its emerging role as the global synchronizer of Countering Weapons of Mass Destruction (CWMD).
   - In 2016, USSOCOM assumed the leading role in the Department of Defense (DoD) for synchronizing CWMD, a responsibility previously held by USSTRATCOM. To support this emerging requirement, what ARSOF authorities, capabilities, expertise, and organizational structure are necessary?
   - Additionally, how could ARSOF support USSOCOM and the interagency through increasing partner capability and capacity to counter weapons of mass destruction?
What interagency policies or issues facilitate, or hinder, USSOCOM’s ability to globally coordinate CWMD?

How could these disparate agencies’ operations, authorities, and responsibilities be further coordinated (or consolidated) to increase responsiveness to potential future crises?  


The “Indigenous Approach,” a value proposition SOF provides to the Nation, is a lens through which operators view challenges to regional stability as problems to be solved chiefly by empowering indigenous populations.

This approach includes leveraging ARSOF core activities such as Foreign Internal Defense and Unconventional Warfare (FID/UW) to build the capabilities of foreign military, security, and/or resistance forces.

How can ARSOF leverage an indigenous approach to prevent or re-scale conflict, or transform indigenous mass (both its physical and cognitive attributes), into combat power to create windows of opportunity in Phase 3, in support of the Joint Force Commander?

11. Improving ARSOF’s ability to counter revisionist states in competition short of armed conflict.

Nation States increasingly seek to gain an asymmetric advantage by operating in the seam between peace and war to achieve their political and military objectives.

Existing theories of deterrence, however, focus on state adversaries in the context of high-end conflict.

What is the role of ARSOF, as part of a whole of government approach, to assess, sort, form, and rescale these security challenges much earlier in their development and level of risk to counter revisionists states’ strategic objectives?

12. Leveraging Additive Manufacturing (AM) to enable ARSOF Military Deception (MILDEC).

3D and 4D Additive Manufacturing (AM) enables the creation of an array of objects (at the point of need) from a variety of raw materials such ceramics, carbon fiber, plastic, metal, sand and binder materials, recycled materials, etc. 4D products change form once triggered by a stimulus such as heat, light or shock.

How could 3D or 4D AM be leveraged for Military Deception (MILDEC)? Conceivably, AM could produce nearly any object, modeled and colored accordingly, allowing ARSOF to custom-design and produce its own implements of deception.

Conceptual examples include: enemy or friendly vehicle decoys; receivers / transmitters to create false signals that mimic larger formations; disguised Listening and Observation Posts (LP / OP)s; facades for obscuration or distraction; command initiated or light / heat-sensitive materials that enlarge, inflate, change color or dissolve, creating many possible forms of deception.
13. **Leveraging Additive Manufacturing (AM) to provide Non-Standard Logistics in austere, politically sensitive, or denied environments.**

- DoD is currently utilizing AM in various capacities from prototyping to producing custom-made parts in field environments. How could ARSOF mitigate existing logistics issues, particularly those associated with operating in remote, politically sensitive, and semi-permissive environments by producing some of its own supply items?

- Could ARSOF leverage AM to increase its self-reliance for some logistics items, such as standard and nonstandard vehicles, weapons, and other repair parts, partially mitigating shortfalls associated with dependence on standard supply/resupply systems? One conceptual example would be field-expedient armoring of locally procured vehicles.

- What are the most pressing materiel (re)supply issues facing ARSOF that could be addressed leveraging capabilities inherent in AM? Top

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14. **Emerging and future use of Artificial Intelligence (AI) in support of Special Operations.**

- There have been numerous advances in AI in recent years. Though the potential exists for military adaptation that could dramatically affect the operational and strategic effectiveness of (AR)SOF and the Joint Force, very few, if any AI capabilities have been fielded for operational use.

- As well, defensive counter-measures against adversarial use of such technologies have not been studied to any substantial degree.

- To what extent can ARSOF leverage AI as a force multiplier in the contemporary and future operating environment as well as counter the threat use of the same? What are the legal, ethical, and moral implications? Top

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15. **Potential emerging and/or disruptive technologies as the next strategic surprise.**

- Directed energy, quantum computing, augmented reality, advanced robotics, the Internet of Things (IoT), Artificial Intelligence, etc., are contributing to the next wave of technological advances.

- Which of these technologies, or combinations thereof, have the greatest potential military utility, which in the hands of an adversary, could pose significant risk to the US or our Partners?

- What can be done now to better understand the realm of emerging and future technological possibilities and how can (AR)SOF best posture to hedge against associated risk? Top

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16. **Improving ARSOF’s ability to lead or enable Military Support to Governance (MSG).**

- ARSOF Civil Affairs (CA) has limited capability to provide MSG, and possesses no organic, fully trained personnel. The MSG capability (38G) resides exclusively in Army Reserve CA.

- ARSOF CA can conduct assessments of civil strengths and weaknesses but cannot conduct civil planning, enable rule of law, provide legal advice or other critical governance functions.
• Is it feasible and/or advantageous to develop a MSG capability within the Active Component; conversely, how could ARSOF best leverage a comprehensive Total Force strategy to enable responsive, enduring civil sector expertise to conduct Military Support to Governance?


• Warnings Intelligence, which has its roots in Cold War ballistic missile defense, largely focuses on high-end conflict conducted by Nation States on the “right side” of the operational continuum.

• Revisionist states however, will continue to seek furthering their political objectives short of the threshold of war.

• In the contemporary and future strategic operating environment, how can ARSOF and the Joint Force shift from primarily observing and calculating physical capabilities to also include seeing, assessing, and understanding indications of competition short of armed conflict earlier in its development and risk profile to maximize decision space to form a response?