DEPARTMENT OF THE AIR FORCE
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**Department of the Air Force
Scientific Advisory Board**

Next Generation Electronic Warfare Study

Abstract

The proliferation and effectiveness of advanced Electronic Attack (EA) and Electronic Protection (EP) capabilities, along with the increasing sophistication of network-centric Electronic Warfare (EW) systems, presents substantial challenges to Air Force operational capabilities. The adversary's ability to degrade and deny US systems for sensing, communications, and positioning, navigation, and timing (PNT) has advanced significantly. New EW techniques, tactics, and architectures are needed to ensure Air Force freedom of operation in this increasingly complex electronic environment.

This study will:

1) Review current and projected adversary EA capabilities against Air Force sensing systems at the device, system, and network levels. Assess the efficiency and susceptibility to various countermeasures of key technical characteristics.

2) Identify EW techniques, tactics, and technologies, including networked approaches, which can detect or mitigate an adversary's capability against Air Force sensing. Assess the efficacy of these approaches relative to different levels of projected adversary capabilities.

3) The assessment will, at a minimum:

   a. Address capabilities required for effective Command and Control (C2).

   b. Address issues including fratricide, robustness, and operation in joint and coalition environments.

   c. Identify multi-spectrum approaches that are particularly capable, robust, and effective, as well as those that can most readily evolve to address changes in adversary capability.

   d. Identify EA techniques and technologies, including single-system and networked EA approaches (processing, devices, and operational strategies) that deny or degrade multi-spectrum adversary sensing, to complement or enhance other steps the Air Force undertakes to deny effectiveness of an adversary's sensing capabilities.

   e. Identify architectures and techniques that have the most promise; technologies needed to implement these architectures and techniques; and promising approaches for meeting these technology needs in the near-, mid-, and far-term.