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

Technology Options to Improved Air Vehicle Fuel Efficiency Study

Abstract

As crude oil prices and worldwide competition for fuel continue to increase, there are increasing pressures on the United States to simultaneously conserve fuel as well as seek new sources of energy for power generation and transportation systems. Within the U.S. military, increasing costs of fuel directly affect the ability to carry out military missions. Hence it is imperative that the Department of Defense, and the Air Force in particular (as the largest consumer of fuel within the DoD), explore ways in which improved fuel efficiency as well as alternative sources of fuel may be realized.

The Air Force Scientific Advisory Board was thus tasked by the Air Force leadership to perform a "quick look" study exploring potential scientific and technological solutions that could impact energy and fuel efficiency. The study was conducted between November 2005 and January 2006, after which study briefings to the AF and DoD leadership were presented. The study's briefing charts (absent facing page text) were publicly released in early March 2006. The present report, consisting of an executive summary and annotated briefing with an elaboration of additional promising technologies (Appendix E), is intended to provide a complete discussion on the background, issues, findings, and recommendations from the study, which focused primarily on-air vehicles.

It is hoped that this document will serve as one of many within the U.S. government that will help to spur our nation toward a more secure and robust energy future.

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