Thesis Project Portfolio

Creation of an Original Design for a Light Attack Aircraft

(Technical Report)

The Impact of a Low Cost Aircraft on Military Strategy and Sociopolitical Environments

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science
University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree
Bachelor of Science, School of Engineering

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Spring, 2021

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Sociotechnical Synthesis

To support today's modern battlespace light attack aircraft (LAA) has emerged to satisfy the niche operational and strategic requirements of low intensity conflicts related to irregular warfare. These conflicts have triggered the need for a more efficient aircraft that excels in both low and slow flight envelopes to support ground troops. In addition to the tactical requirements these aircraft meet, these aircraft need to be a low-cost solution due to budgetary constraints of many nations' budgets. Reduced cost has become highly desirable to minimize the impact of ongoing and costly regional wars.

In addition to meeting the military needs of today's battlespace, these weapon systems dramatically affect the expansion of regional conflicts and its impact on civilian populations and the sociopolitical landscape of many countries. After decades of constant wars around the world fighting terrorism and insurgencies, nations are becoming frustrated with the financial drain on budgets and the tremendous loss of lives. Due to increasing pressure from American citizens, along with changing political dialogue, there is a strong desire to reduce the U.S. defense budget that supports fighting wars overseas. In addition to these socioeconomic pressures influencing public opinion, there is tremendous political pressure to avoid sending troops overseas to fight "endless" wars.

The group initially started our research with a market survey of industry solutions for LAA. A review of sources was used to develop a cost model for acquiring and operating LAA. A major challenge to this research was that much of the cost data was either sensitive military or company proprietary data and difficult to obtain. Due to the limited publicly available data on military programs assumptions were made and costs were estimated using comparable civilian

model aircraft acquisition and operating costs, as well as some operational costs from similar military aircraft type missions.

This project developed a good cost model for LAA while giving the reader evidence of the ethical quagmire of introducing new modern weapons systems into the battlespace. An analogy of the ethical impact of low intensity conflicts in many parts of the world is represented by a proverb that applicably reflects the impact of these conflicts. It is an old African proverb that says, "when two elephants fight it is the grass that suffers". The impact of these conflicts by countries and insurgents have had an excessively horrible consequence on its civilian populations from mass dislocations to death. Examples of these horrifying consequences of low intensity conflicts from around the world are countless. The fear is that small civilian protests and the government retaliation against them will escalate into civil war giving rise to an increase in terrorism and insurgency uprisings

This project will aid individuals in creating better cost models in the future for the acquisition and use of LAA while addressing the unintended consequences of the severe impact to certain stakeholders in the modern battlespace of irregular warfare. The bottom line is that "is the world better off with LAA as a new weapon system in today's modern military"?