**American Institute of Aeronautics and Astronautics: Light Attack Aircraft Design Competition**

**(Technical Topic)**

**Gender Inequality in Aircraft Design**

**(STS Topic)**

By

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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# Sociotechnical Synthesis

Light Attack Aircraft Design for Austere Fields
(Technical Topic)

Gender Inequality in Aircraft Design
(STS Topic)

The technical aspect of this Undergraduate Thesis addresses how current military Light Attack Aircraft (LAA) are not built to withstand landing and taking off from austere fields, which is a landing strip that is run down, rocky, or grassy. The technology my capstone team is designing is a state-of-the-art LAA that is capable of landing and taking off on austere fields. Our design will bridge the gap between helicopters and current LAA by creating an aircraft that has the typical weaponry of LAA with enhanced mobility of helicopters. The research aspect focuses on a human factors issue within aircraft design. The paper seeks to determine if gender inequality in cockpit design can be ameliorated by the recertification of rules and regulations that control aircraft design. These design standards were first written in 1968 when males were the only legal operators of aircraft. It is important to consider the human and social dimensions of aircraft cockpit sizing because every aircraft on the market, whether it be military, civilian, or general aviation, were built to fit the average male body and this no longer encompasses the entire population of pilots. The theoretical frameworks of Social Construction of Technology and Inclusive Design will be used in tandem to show that 'one size does not fit all', and that short-statured humans, which include the majority of female pilots, need to share their experiences and incite social change to recertify cockpit design standards to fit a larger range of body sizes. A survey asking for a participant's height and experiences with physical difficulties in aircraft cockpits was created and shared with a network of female aviators on LinkedIn and within The 99s, a female aviators social group. Survey responses highlighted a variety of physical struggles, and the average height measurement supported my argument that design standards which are crafted around the average male size can not provide an inclusive and comfortable design for female aviators. Although the design of our Light Attack Aircraft does not require an internal cockpit design, I would encourage flexible seat belts, a longer track for the pilot and copilot seats, and a seat elevator as these design implementations will provide an inclusive design for small-statured people. Our LAA design is meant to fly critical missions and will therefore require the highest caliber pilots. Anthropometric sizing should not be the deciding factor of whether or not a person can fly an aircraft. Design standards need to be recertified so that future aircraft cockpits will implement technologies based on the range of average female anthropometric sizes to average male anthropometric sizes.

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