

Robins Air Force Base for Science and Engineering proposal for Senior Design Project

The project representative/sponsor for this project is Mr. Steve Fazzini. There is no single direction that this project must take. If a team accepts the project, Mr. Fazzini can work with the students to ensure that it meets the expectations and provides us some valuable insight.

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Project Name--Preliminary Fault Investigation for Hydraulic Lock-Up Device

Background

Hydraulic lock-up devices are used by the United States Air Force on aircraft to restrict movement for high velocity forces. These devices are disassembled, cleaned, and all of the soft components are replaced on a periodic basis. After reassembly, these devices are tested for proper operation. Recently The USAF is seeing an increase in failure rates for one of these devices. The Air Force has no engineering technical data for the design.

Purpose

The purpose of this project is to do a preliminary investigation of the hydraulic lock-up device to determine likely causes for operational test failure and to identify possible sensitivities within the device that may be contributing to fail operational retest failure. A sample of current failed hydraulic lock-up devices will be provided, disassembly and reassembly instructions. A prototype testing device created by a prior senior design group from Georgia Tech will also be provided for testing.

Deliverables:

- Create models where necessary
- If needed support this effort, a 3D-model of the design would be greatly appreciated but not required
- Determine likely causes for failing post-overhaul operational test
- If applicable, identify deficiencies in the disassembly and assembly process that are likely to contribute to operational test failures
- If deficiencies are found in the programming or design of the tester, make recommendations and possibly incorporate improvements