STRUCTURE AND SYSTEMS
• Standardized test stand geometry for handling a wide variety of engines
• Save cost on future projects by having a modular system
• Design helps in easy of transportability
• Equipment accessible to all groups in ERPL
• Test stand over engineered to ensure safety of personnel and property
• Built on 5’ x 8’ Heavy Duty Trailer
• Superstructure of test stand welded to ensure proper fitment and stability
• Generator on board for power supply in remote locations
• Cooling system for diffuser to prevent overheating
• Industrial computer to operate in adverse weather conditions
• NI DAQ to record accurate data
• Engine mounted on blast shield for safety purposes

PROJECT ATLAS
• A mobile, trailer-mounted, rocket engine test stand
• Developed by Experimental Rocket Propulsion Lab (ERPL)
• Supports ERPL’s various engine research projects, such as:
  • Project Aquila (Liquids),
  • Project Vulcan (Hybrids),
  in their engine testing and data acquisition
• Designed as a horizontal thrust structure
• Utilizes a dual flame duct to redirect and cancel any reaction forces
• Duct also minimize the required anchoring strength
• Blast shield to protect the testing equipment
• Instrumentation system to measure thrust, temperature, and pressure inside the combustion chamber of the engine
• Additional system of instruments to measure the temperatures and pressures corresponding to the fuel and oxidizer piping systems
• Atlas will enable further rocket engine design and evaluation

INSTRUMENTATION AND CALIBRATION
• Verification of various instruments for validity and reliability
• Accelerometers and sensors firmly attached to the structure
• Deflections in load cells to be included in error calculations
• Noise induced to be filtered using proper filters and coding
• Sensors data acquired through multiple channels on data acquisition
• Data recorded and used for further research

DUTIES AND RESPONSIBILITIES
Principal Investigator  Collin Mickels
Design Engineer Sattar Panahandehgar
Structures Conrad Herold Wright, Alona Prokofieva
Data Acquisition Collin Mickels
Propellant Feed Noah Soderquist, Sattar Panahandehgar
Propulsion Systems Naveen Sri Uddanti

Circuit Diagram and LabVIEW Instrument Panel for Aquila Liquid Engine

Custom Circuit Board and Data Acquisition Bay

Engine Mounting System with Vulcan Hybrid Engine

Atlas Test Stand