DESIGN, FABRICATION, AND CHARACTERIZATION OF A LOW-DISTURBANCE, ACTIVELY-CONTROLLED, MACH 5 TO 8 WIND TUNNEL

A Dissertation Proposal

by

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LIST OF TABLES

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1. INTRODUCTION

1.1 Hypersonics

Some stuff here about hypersonics

1.2 Hypersonic Wind Tunnels

Wind tunnel stuff

1.3 Turbulence

Turb stuff

2. DESIGN AND FABRICATION OF ACE2.0

2.1 Motivation

The conventional ACE (Actively Controlled Expansion) Tunnel was designed...

2.1.1 Turbulent Transition

Stuff

2.1.1.1 ACE Experimental Data

Stuff and figures

Figure 2.1: A caption about this figure

2.1.1.2 Mach Line Tracing

Stuff and figures

Figure 2.2: Another caption

2.1.1.3 Suspect Transition Mechanisms

Stuff here [1]

1. Throat
2. Stuff
3. Stuff
4. Stuff

2.1.2 Active Contol Capability

Stuff here

2.2 Design

Stuff

2.2.1 Nozzle Contour Codes

Stuff and figures

2.2.2 CFD

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2.2.4.1 Nozzle and Settling Chamber

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2.2.4.3 Final Design

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2.3 Fabrication

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2.4 Installation and Calibration

Stuff and figures

Figure 2.3: A caption about penguins

2.4.1 Assembly

Stuff and figures

2.4.2 Actuation

Stuff and figures

2.4.3 Actuation Homing and Calibration

Stuff and figures

2.4.4 First Run

Stuff and figures

3. EXPERIMENTAL SETUP AND MEASUREMENTS

3.1 Nozzle Survey

Stuff

3.2 Mach Sweep Hysterisis

Stuff

3.3 Mach Sweep Constant Unit Reynolds Number

Look into using control system (servo?) to control P0 to maintain constant Re' through Mach sweep. May need two valves in series and may need to anticipate mach change with P0 change ahead of time depending on response time.

4. RESULTS AND DISCUSSION

Stuff about experminet results

Figure 4.1: A caption about penguins

More stuff

4.1 Maybe

4.2 Possibly

5. CONCLUSIONS AND RECOMMENDATIONS

Stuff here

5.1 Maybe

5.2 Possibly

REFERENCES

[1] W. S. Saric, "Görtler vortices," *Annual Review of Fluid Mechanics*, vol. 26, no. 1, pp. 379–409, 1994.

APPENDIX A

FIRST APPENDIX

Text for the Appendix follows.

Figure A.1: A caption here

APPENDIX B

THIS TITLE IS MUCH LONGER THAN THE FIRST AND EXTENDS ALL THE WAY TO THE NEXT LINE

Text for the Appendix follows.

Figure B.1: A caption here

B.1 Appendix Section

B.2 Second Appendix Section