THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Study of launcher recovery systems**
Author's name:	**Rojas Sigala Mauro Eusebio**
Type of thesis :	master
Faculty/Institute/	Czech Technical University in Prague
Department:	Faculty of Electrical Engineering (FEE) Department of Control Engineering & Lulea University of Technology Department of Computer Science, Electrical and Space Engineering (SRT)
Thesis reviewer:	Mgr. Jaroslav Kousal, Ph.D.
Reviewer's department:	Czech Technical University in Prague Faculty of Mechanical Engineering (FME) Department of Aerospace Engineering

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment — **challenging**

How demanding was the assigned project?

The assignment had several parts. Both the development (design) of the draft of the prototype propulsion and the study of the impact of the developed recovery concept on the space sector are broad topics already.

Fulfilment of assignment — **fulfilled with minor objections**

How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.

The assignment was generally fulfilled, however, the "impact on the space sector" is mostly "between the lines".

Methodology — **correct**

Comment on the correctness of the approach and/or the solution methods.

The methodology in terms of the theoretical background is mostly correct.

Technical level — **C - good.**

Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?

Most of the calculations are sound in the detail, but the overall picture is kind of hazy. For example, on various places in the work, the scaling of the subsystems are taken as directly proportional to the total mass of the system (the rocket launcher). This is a very crude estimation, since the 1D/2D/3D scaling laws play a significant role both in terms of physics and technology. Another point is that the propulsion system is designed carefully in terms of dimensions, but not in the terms of mass. Also, in the section 3.3 it seems that the Stage 1 is initially designed with thrust/weight ratio below 1.

Formal and language level, scope of thesis — **C - good.**

Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?

The thesis is generally readable, but the amount of various language mistakes and errors (including sentences cut in half) sometimes hamper the comprehension of the text. It seems that the author did not read the final text in full. There are also some formal issues (missing page numbering, figures not referenced in the text etc.).

Selection of sources, citation correctness — **B - very good.**

Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?
The set of sources seems to generally cover the topics treated in the work. However, sometimes it is not clear what is the actual author's work (e.g. in the MATLAB codes).

Additional commentary and evaluation (optional) *Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.*

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

Summarize your opinion on the thesis and explain your final grading. Pose questions that should be answered during the presentation and defense of the student's work.

The thesis had to deal with a challenging topic and the author had to work with a multi-layered problem. The very core of the work seems to be sound, but it seems that a full treatment of this topic would need some more time to refine.

During the presentation/defense I suggest the following questions to be answered:
1) On various places of the work a linear scaling of subsystem mass with total system mass is assumed. Which of these assumptions lead to overestimation and which ones to underestimation of the subsystem mass?
2) What would be the estimated mass of the propulsion system (in the final iteration)?

The grade that I award for the thesis is **C - good.**

Date: **28.8.2020** Signature: