

## POSUDEK OPONENTA DIPLOMOVÉ PRÁCE

### A REVIEW OF THE DIPLOMA THESIS

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**Název / Title:** GEOFYZIKÁLNÍ PRŮZKUM SESUVŮ V RŮZNÝCH GEOLOGICKÝCH PROSTŘEDÍCH /  
GEOPHYSICAL IMAGING OF LANDSLIDES IN VARIOUS GEOLOGICAL SETTINGS

**Vedoucí práce / Supervisor:** Mgr. Jan Valenta, Ph.D.

**Oponent / Reviewer:** RNDr. Petr Tábořík, Ph.D.

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The presented diploma thesis has 49 pages and it is divided into 9 chapters (+ list of references) and appendices. Whole text (except the Czech abstract) is written in English. The thesis has the title GEOPHYSICAL IMAGING OF LANDSLIDES IN VARIOUS GEOLOGICAL SETTINGS. First, the reviewer will comment individual chapters and then he will evaluate the thesis as a whole.

#### 1. Introduction

The chapter has three pages' extent and it includes the main information on landslide issues in a condensed form. These 3 pages are filled up with the introduction of the landslide hazard and its mitigation in the evolving countries areas, as well as with the main aspect of the landslide investigation and the main survey methods used. The reviewer considers this part of thesis as fully sufficient and well elaborated using a significant number of references.

#### 2. Area of the study

- short but sufficient chapter with general information on investigated sites

#### 3. Geological setting

- sufficient information, quite detailed, no further comments needed

#### 4. Landslides Hazard

- this chapter develops and well complements the chapter 1. Introduction

#### 4.1 – 4.3 detailed description of the landslides studied

Fig. 5, Fig. 6 or Fig. 7 - at least numbers or other indication of the seismic profiles should have been provided!!! This part of the thesis is slightly weak.

#### 5. Geophysical methods: an overview

- the chapter - again in a condensed form – refers to the main aspect of the geophysical surveying on landslides. The author discusses mainly the problems with a penetration depth, resolution and noise. He emphasizes also the aspect of further data processing and interpretations.

#### 6. Geophysical Methods and Data Acquisition

The methodology and data processing are described relatively widely and in detail. The reader does not lose the orientation in the text and the chapter give us the idea how the data were acquired and further processed.

Concerning the methodology (both “landslide investigation methods” and “geophysical surveying”), the author uses really rich library of scientific and technical papers and studies. He refers to numerous studies not only in the research (ve smyslu “rešeršní”, description of state-of-the-art research) part of his thesis but also in the rest of the text, wherever it is necessary or appropriate. It is one of the strong qualities of the presented work.

## **7. Results**

The results are presented and interpreted within this chapter. All three localities are represented by one figure each. The figures display some of the shallow seismic profiles measured, however not all of them. The rest of the measurements (inverse velocity models respectively) are presented further within appendices. However, they are not linked by any reference in the text! The Results chapter also includes some geophysical interpretation of the seismic profiles. Further “qualitative” interpretations are, nevertheless, stated in the following Discussion part, what the reviewer consider as a correct approach.

## **8. Discussion**

Discussion chapter includes further interpretations of the velocity models, aiming at different geoscience fields, namely lithology, tectonics, hydrogeology and engineering geology. It also concludes, that majority of the landslides in the studied area origins in unconsolidated material with typical low seismic velocities.

In the chapter, the author also discusses local results of the load tests and Schmidt hammer tests, however, this fact (the utilization of these tests) should be stated in the methodology part where no mention on such methods is stated!

## **9. Conclusion**

In this study, the seismic refraction tomography techniques were used for the investigation of a landslide site. This chapter concludes results and discussion and also includes some suggestions (recommendations) for a landslide hazard mitigation and stabilisation of the slopes in the studied area.

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### **Main remarks and objections:**

The whole text of the presented thesis is well structured and a sequence of the chapters follows the logic. A reader does not get confused in any time and whole arrangement of the thesis is intelligible.

Formal errors are limited on an imperfection and lack of consistency resulting in numerous typing errors (typically missing space after dot or coma etc.). There are quite significant number of such errors through the whole text, however, they have no effect on the general quality of the text (the main message of the thesis remains clear and unaffected).

There is a slight inconsistency in labelling of figures. E.g. Fig. 2 has the caption bellow the figure, whilst Fig. 3 above!

The reviewer does have a problem with missing references to figures in the text. The author uses the references in the text only in chapters 7. Results and 8. Discussion. Also there are no references to appendices which make the orientation in the text slightly worse!

Also the Figures itself have some deficiency. At least a simple labelling of the seismic profiles would be convenient!

The reviewer, as a non-native English speaker, does not consider himself as the person convenient for the language evaluation. However, leaving the typing errors aside, the reviewer noticed only few errors in grammar and regards the text intelligible and fluent.

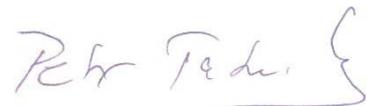
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**Question to the author (should be answered during Master thesis defence):**

Considering the seismic survey as one of the most demanding method on manpower (with utilization of the sledge hammer), what other geophysical techniques could you use to investigate similar sites? *(Small hint: What other methods have the ability to distinguish between an upperlying unconsolidated material and an underlying bedrock which is rather compacted, solid.)*

**Despite the numerous formal errors which unnecessarily devaluate overall quality of the thesis, the reviewer considers presented Master thesis well elaborated and such as he recommends it for the thesis defence (“doporučuji k obhajobě”).**

In Prague Sept 3<sup>rd</sup> 2019



RNDr. Petr Tábořík, Ph.D.

oponent diplomové práce / diploma thesis reviewer