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Doctoral Review Committee  
Faculty of Science  
Charles University in Prague  
Albertov 6, 128 43 Praha 2  
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Wednesday 27<sup>th</sup> June 2012.

**RE:** Jaroslava Hajná, Ph.D. candidate, Department of Geology and Paleontology

Dear Members of the Doctoral Review Committee,

I have read the doctoral dissertation of Jaroslava Hajná with great interest and congratulate her on an excellent piece of research. Ms. Hajná has utilized a very broad range of geologic disciplines in her study of the Teplá-Barrandian Unit of the Bohemian Massif (including stratigraphy, structural and AMS analysis, petrology, geochemistry and geochronology), as a result of which she has been able to go a long way towards unraveling the complex geologic history of this important tectonostratigraphic unit. This alone constitutes an achievement more than worthy of the doctoral degree. But the significance of Ms. Hajná's research goes much further. Not only do the results of her work constitute a major advance to our knowledge of the Teplá-Barrandian Unit, but they also contribute significantly to our understanding of the entire Avalonian-Cadomian orogenic belt of which this unit is part.

Principal among these contributions are: (i) the redefinition and correlation of the stratigraphy of the Teplá-Barrandian Unit with the introduction of a new lithotectonic zonation, (ii) the description and interpretation of possibly the best-preserved accretionary wedge (the Blovice Complex) within the entire Avalonian-Cadomian orogenic belt, and the formulation of a realistic model for its development, (iii) the recognition of Neoproterozoic mélangé formation by essentially modern plate tectonic processes, (iv) the confirmation of the polarity of Cadomian subduction, (v) identification of the timetable and orientation of Early Paleozoic crustal extension, (vi) successful discrimination of the Cadomian structural/metamorphic history of the Teplá-Barrandian Unit from subsequent early Paleozoic and Variscan overprints, (vii) the identification of the orogen-scale Krakovec ductile shear zone and the development of a model for strain partitioning in response to Variscan subduction and underthrusting, and (viii) the formulation of a plate tectonic model for the evolution of the Teplá-Barrandian Unit from Cadomian active margin, through Cambro-Ordovician rifting, to Variscan collision.

The bulk of Ms. Hajná's thesis has either been published or is in the process of publication and requires no further peer review. Indeed, the success that Ms. Hajná has had in seeing his work published in high-caliber journals such as *Gondwana Research*, *Precambrian Geology* and *International Journal of Earth Science*, speaks highly of the quality of his research. I have, however, taken the liberty of editing the English in those sections that will not be, or have yet to be, published, and have pointed out places where some judicial rephrasing might be beneficial. These suggestions accompany an annotated copy of the thesis sent by e-mail to Dr. Jiří Žák.

The only questions I have for Ms. Hajná do not concern her thesis, but speak to future research aimed at answering some of the questions her thesis raises and/or resolving some of the remaining areas of uncertainty. All of these questions centre on the need for further precise age dating. The compilation of available age data for the Teplá-Barrandian Unit reveals many of these to be older K/Ar and Rb/Sr or imprecise Sm/Nd ages, the reliability of which is uncertain. Where possible, the replacement of these data with new single crystal Ar-Ar and U-Pb zircon ages would clearly be beneficial. To what extent, for example, is the protracted time-span of accretionary wedge development a function of the reliability and/or availability of age data? Similarly, I am uncertain of the extent to which the depositional ages of the various basement units of the Teplá-Barrandian Unit have been constrained by the detrital zircon age spectra of Kerstin Drost, particularly in light of Ms. Hajná's revised zonation, but I suspect much more could be done. It would also be interesting to find out whether the detrital zircon age population maxima at ~615, ~600, and ~570 Ma represent distinct phases in Cadomian arc development by further precise dating of appropriate arc rocks in the Davle Formation. If Ms. Hajná continues her research in the Teplá-Barrandian Unit, and I very much hope she does, these are clearly areas for further study.

With regard to her thesis, however, Ms. Hajná is to be congratulated on a first-class piece of work. Research of this caliber would certainly merit the award of a doctoral degree at any university in North America and I strongly encourage the committee to vote positively on Ms. Hajná's behalf.

Yours sincerely,



R. Damian Nance  
Distinguished Professor