

The large Variscan strike-slip fault between Kozičín and Řitka villages, Barrandian, Bohemian Massif

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The Clay and the Závist faults were described as two different structures. Both these faults are steeply dipping and striking in SW–NE direction. As both faults have reverse dip-slip component but opposite dip direction, it seemed evident that they are really two different faults.

The Clay fault was recognized in mines of the Příbram and Bohutín ore districts and named by ancient miners. The dip varies from 70° to NW in the SW part at the Kozičín surroundings to nearly vertical in the NE part at the Pičín area (Havlíček, 1973). Havlíček (1981) classified this structure as an overturned synsedimentary normal fault. He deduced the Cambrian age of the fault base on his geological map, where the Lower Paleozoic basalt dike cross-cuts the fault surface. The SW end of the fault is marked by the downthrown SE block with the Lower Paleozoic sediments (“Rožmitál Islet”), which is rimmed by the tonalitic intrusion (Blatná type).

The Závist fault was described by Kettner (1911). The main SW part of the fault steeply dips to the SE in the Řitka surroundings. Near Kamýk in Prague, the fault surface splits into two branches. The first one turns to the WSW–ENE direction and dips slightly to the SSE making typical thrust,

the second one continues to the NE, e.g. in the same direction as the main part, and after 2.5 km turns in the same way as the first branch.

Havlíček’s idea assuming Cambrian age of the Clay fault was tested with new geophysical data, showing the basaltic dike cut by this fault (Šešulka et al., 2011) and therefore the Clay fault should be younger. We can associate origin of the fault with intrusion of the Blatná tonalite, age of which is 346 ± 10 Ma (Holub et al., 1997). The Lower Carboniferous age of the Závist fault was accepted by all authors without any doubt, as the Lower Paleozoic sediments are overthrust by Proterozoic rocks along this fault.

Both of the studied faults are terminated by the compensation structures, which indicate their sense of movement. The extensional post-sedimentary pull-apart depression of the Rožmitál Islet and intrusion of the Blatná tonalite at the SW end of the Clay fault indicate sinistral strike-slip movement, which is accompanied by the dip-slip component indicating uplift of the NW block. Small thrusts at the NE end of the Závist fault indicate the same sinistral sense associated with upthrown SE block. This means, that both faults have the same sense of movement, the other dip-slip components can be explained by the influence of vertical movements, produced by considered compensational structures.

Based on these arguments, it is evident that both faults are only parts of one sinistral strike-slip fault originated during the Lower Carboniferous. The fault length is over 60 km. It starts near Rožmitál town, then runs through Kozičín, Pičín and Řitka villages and ends in the SE margin of Prague.

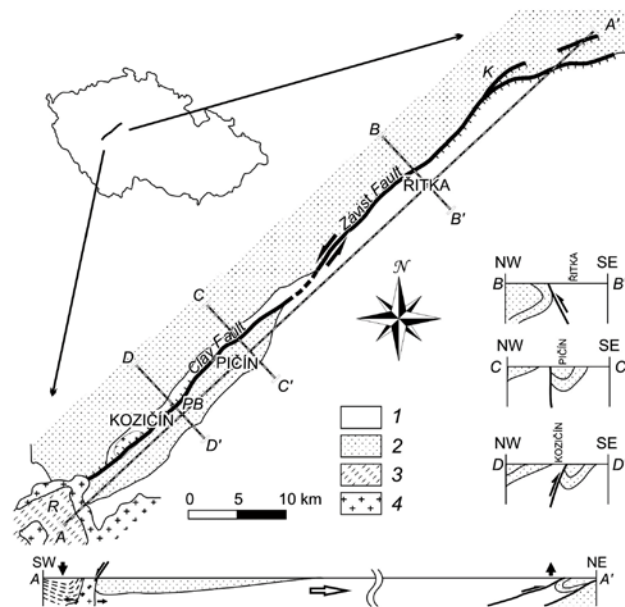


Fig. 1. Schematic map and cross-sections of the Clay fault and Závist fault. 1 – Proterozoic; 2 – Lower Paleozoic; 3 – Rožmitál Islet; 4 – Tonalite; R – Rožmitál town; PB – Příbram town; K – Kamýk.

References

- HAVLÍČEK, V., 1973: Horizontal displacements in the Příbram area. *Věst. Ústř. Úst. geol.*, 48, 225 – 228. (In Czech.)
- HAVLÍČEK, V., 1981: Development of a linear sedimentary depression exemplified by the Prague Basin (Ordovician-Middle Devonian; Barrandian area – central Bohemia). *J. geol. Sci.*, 35, 7 – 43.
- HOLUB, F. V., COCHERIE, A., & ROSSI, P., 1997: Radiometric dating of granitic rocks from the Central Bohemia Plutonic Complex (Czech Republic): Constrains on the chronology of thermal and tectonic events along the Moldanubian-Barrandian boundary. *Comptes Rendus de l'Académie des Sciences, Series IIA. Earth planet. Sci. Lett.*, 325, 1, 19 – 26.
- KETTNER, R., 1911: Bed fault between Závist and Modřany gully. *Sbor. Čes. Společ. zeměvěd.*, 17, 256 – 258. (In Czech.)
- ŠEŠULKA, V., KNÍŽEK, M., & MELICHAR, R., 2011: Geophysical research of Clay fault in the vicinity of village Pičín (Barrandian, Bohemian Massif). *Trav. Géophysiques*, 40, 80 – 81.