Hlavný problém pri ich interpretácii predstavuje príslušnosť hlavných tektonických jednotiek k severnému, alebo južnému okraju Tethys. Dôsledkom toho je potom aj korelácia smerov remanentnej magnetickej polarizácie so štatisticky spracovanými smermi príslušnej stratigrafickej úrovne severoeurópskej, alebo africkej platformy. Mladopaleozoické jednotky Západných Karpát sú vzťahované k severnému okraju Tethys a logicky korelované s paleosmermi severoeurópskej platformy a vykazujú rotácie v smere hodinových ručičiek, na rozdiel od výsledkov z transdanubického centrálneho masívu, ktorých rotácie v smere hodinových ručičiek sú vzťahované k africkej platforme.

Marton, E. et al. 1987; Muška, P. — Vozár, J. 1987). Das Hauptproblem der Interpretation besteht in der Zugehörigkeit tektonischer Haupteinheiten entweder zum Nord- oder zum Südrand der Tethys. Demnach werden auch Richtungen der remanenten Magnetisierung mit statistisch bearbeiteten Richtungen vom entsprechenden stratigraphischen Niveau der Nordeuropäischen bzw. der Afrikanischen Plattform korreliert. Die jungpaläozoischen Einheiten der Westkarpaten werden auf den Nordrand der Tethys bezogen, und ihre Rotationen im Uhrzeigersinn mit den Paläorichtungen der Nordeuropäischen Plattform korreliert, zum Unterschied von Ergebnissen aus dem Donau-Zentralmassiv, dessen Rotationen im Uhrzeigersinn auf die afrikanischen Richtungen bezogen werden.

THE MIROSLAV HORST — MOLDANUBIAN KLIPPE OR AUTOCHTHONOUS MASSIF

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Introduction

An old enigma exists in the tectonic interpretation of the Miroslav (Misslitzer) horst at the eastern boundary of the Bohemian Massif (Fig. 1). The horst itself is in its southern part formed by typical Moldanubian granulites and amphibolites (Dudek, 1963; Němec, 1980). In the northern continuation of the Miroslav horst mostly Moravian and probably also Brunnian rocks crop out.

Three totally different units (terranes) existing at the eastern boundary of the Bohemian Massif — catazonal Moldanubicum, mesozonal Moravicum and Brunnia deformed and sheared basement — occur in the very small and complicated territory of the Miroslav horst together. The Miroslav horst is bounded by the Diendorf (Boskovice) fault in the west and by the Miroslav fault in the east.

Because the horst is situated east of the Boskovice furrow, tectonic problems of the emplacement of the Moldanubian and Moravian complexes have existed since the end of the last century. Suess (1912) considered Moldanubian relicts as tectonic remnants of the huge "Moldanubische Überschiebung". Following the Austrian and Czech workers (Preclik, Zapletal etc) the Miroslav horst was interpreted in a similar manner until Dudek (1963) proposed that the Moldanubicum could be autochthonous in the Miroslav horst.

Several years ago we prolonged one Carpathian foredeep seismic line (287A/84) to the West and passed the Miroslav horst (Figs. 1 and 2). The field technique employed to obtain the seismic reflection data examined at Geofyzika Brno was standard VIBROSEIS practices used for oil exploration. The compressional wave source in this survey consisted of three vibrators operating synchronously and transmitting a sweep signal with the frequency varying linearly from 15 to 60 Hz. The duration of each sweep was 11 s with the total recording time of 14 s, resulting in 3 s of correlated reflection data. A 48-channel recording system was used with a 25-metre station spacing, producing offset of 1 175 m. Vibrating every second station resulted in nominal 12-fold data.

Interpretation

The section displayed (Fig. 3) is not migrated, and so dipping reflections on the time sections are not in their true positions. A final geologic section (Fig. 7) is constructed using hand migrations of more than 40 reflections. In this short contribution I will concentrate on the Miroslav horst itself between km 3.8 (the Diendorf fault) and km 8 (the Miroslav fault).

In Fig. 3 we see the line drawing of the unmigrated time section. Reflections B and C are strongly inclined (35° — 38°) after hand migration. I consider them thrust faults features (duplexes) beneath the 1 km Moldanubicum overthrust fault. These duplexes are typical of deformed Brunnia rocks elsewhere in the Brno Massif. Because south of the horst the Culm rocks have been drilled (Batík, Skoček 1981), which are always deformed together with the Brunnia rocks, this hypothesis seems to be reasonable.

In the upper part of the section I interpret the easterly dipping reflections D as Moldanubian overthrust over the Brunnia complex. This hypothesis is supported by migration of seismic data, gravity interpretation and mainly by structural geologic observations.

The hand migration of the reflections enabled us also to observe that no reflections cross steeply the Diendorf and Miroslav faults. These faults behaved probably during the post-collisional Upper Carboniferous — Lower Permian times as left lateral strike-slip faults bringing southern blocks to the North.

In that case, the Miroslav horst was probably present during the collisional thrusting between the Moldanubicum and the Brunnia in the direction opposite to the central part of the Thaya window. Němec (1980) noted that the Miroslav granulites are more similar to the Austrian than to the Moravian ones, which is in favour of our hypothesis.

Conclusion

The final simple geologic section (Fig. 4) illustrates the view presented above. Amphibolite bodies have been interpreted from the gravity data. Beneath the Moldanubian overthrust, the Brunnia (with Devonian and Culm sediments) rocks are strongly sheared and tectonized, and form typical duplexes mapped geologically in other places. The western and eastern segments west and east of the Diendorf and Miroslav faults are similar. Significant thrusting

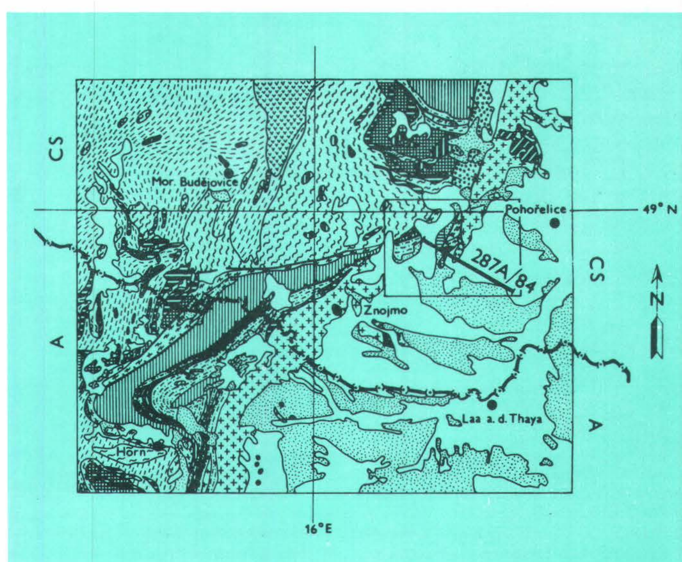
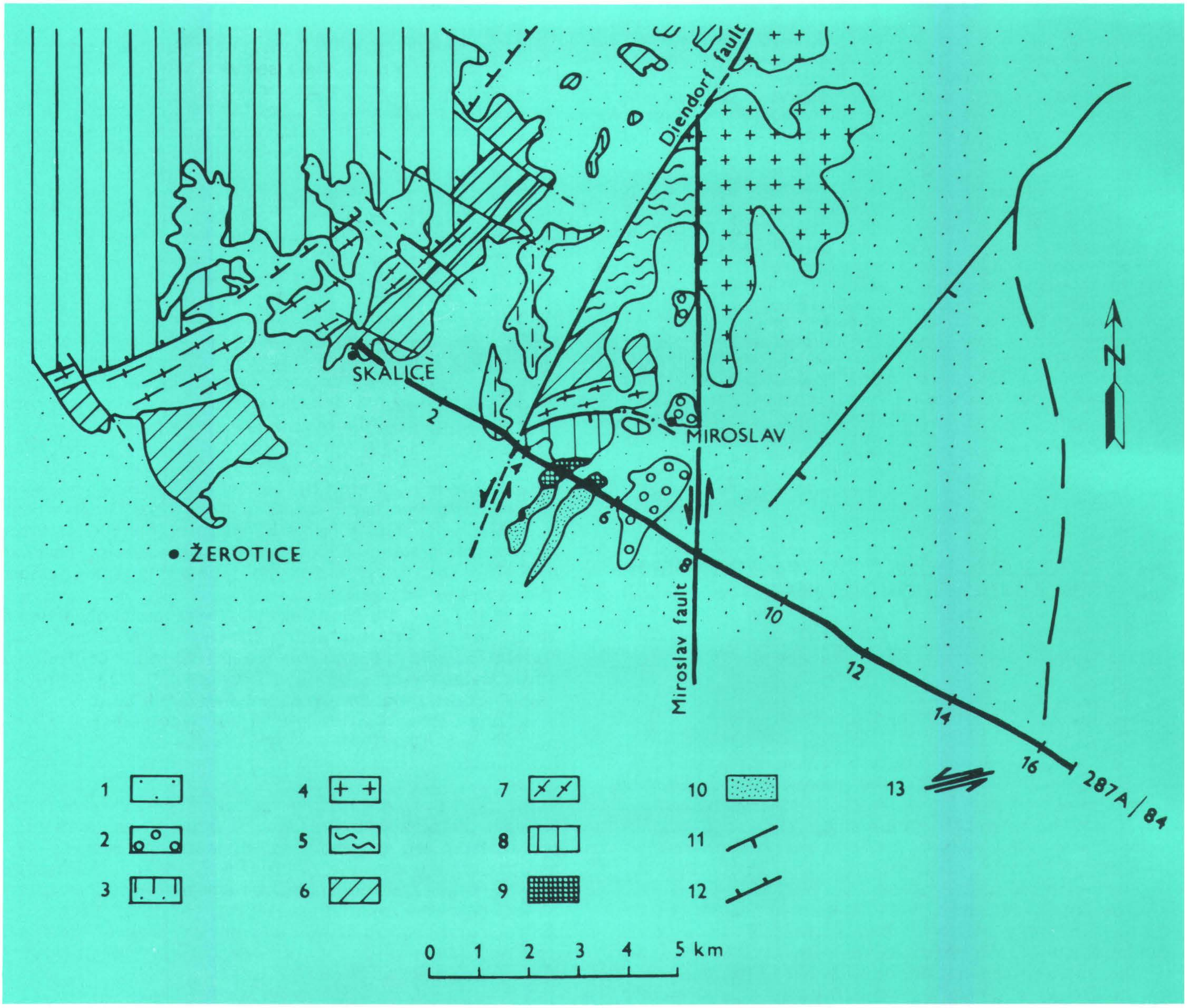


Fig. 1: Simplified geological map of the eastern boundary of the Bohemian Massif between Horn and Pohořelice with the position of the seismic line 287A/84.



and shearing of the Brunnia rocks can also be observed there. Detailed interpretation of tho whole line is presented synchronously elsewhere.

In principle, the seismic data support the old statement by F. E. Suess. The Moldanubian rocks in the Miroslav horst are, most probably, of an allochthonous character and caused the tectonization of the less metamorphosed Brunnia basement complexes during the thrust sheet movement.

Fig. 2: Detailed geologic map of the Miroslav horst and its surroundings with the position of the seismic line 287A/84. Explanations:
1 — Neogene sedimentary rocks, 2 — Permian, 3 — Culm, 4 — Brno Massif (deformed and sheared Brunnia), 5 — Brno Massif (?) — Moravicum (?), 6 — Moravicum (biotitic phyllites), 7 — Moravicum (two-mica orthogneisses), 8 — Moldanubicum (garnet-sillimanite gneisses), 9 — Moldanubicum (garnet-pyroxene amphibolites), 10 — Moldanubicum (granulites), 11 — normal fault, 12 — thrust fault, 13 — strike-slip fault.

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Abstrakt

Krátký seizmický reflexní profil 287/84 změřený pro účely naftové a plynové prospekce v karpatské předhlubni velmi pomohl pro pochopení povahy a tektonické pozice miroslavské hrástě na jižní Moravě. Seizmické reflexní údaje, geologická pozorování a interpretace ostatních geofyzikálních údajů hovoří spíše pro moldanubický alochton (hypotéza F. E. Suesse) než pro moldanubický autochtonní masív na východní straně boskovické brázdy. Pod moldanubickým (morávním) alochtonem leží silně porušené a střižené horniny brunnie s jejich devonským a kulmským sedimentárním pokryvem. Boskovický a miroslavský zlom jsou velmi pravděpodobně téměř vertikálními pozdně paleozoickými horizontálně směrnými posuny.

Zusammenfassung

Das kurze reflexionsseismische Profil 287/84, das im Rahmen der Erdöl- und Erdgaserkundung der Karpatenvortiefe gemessen worden war, trug

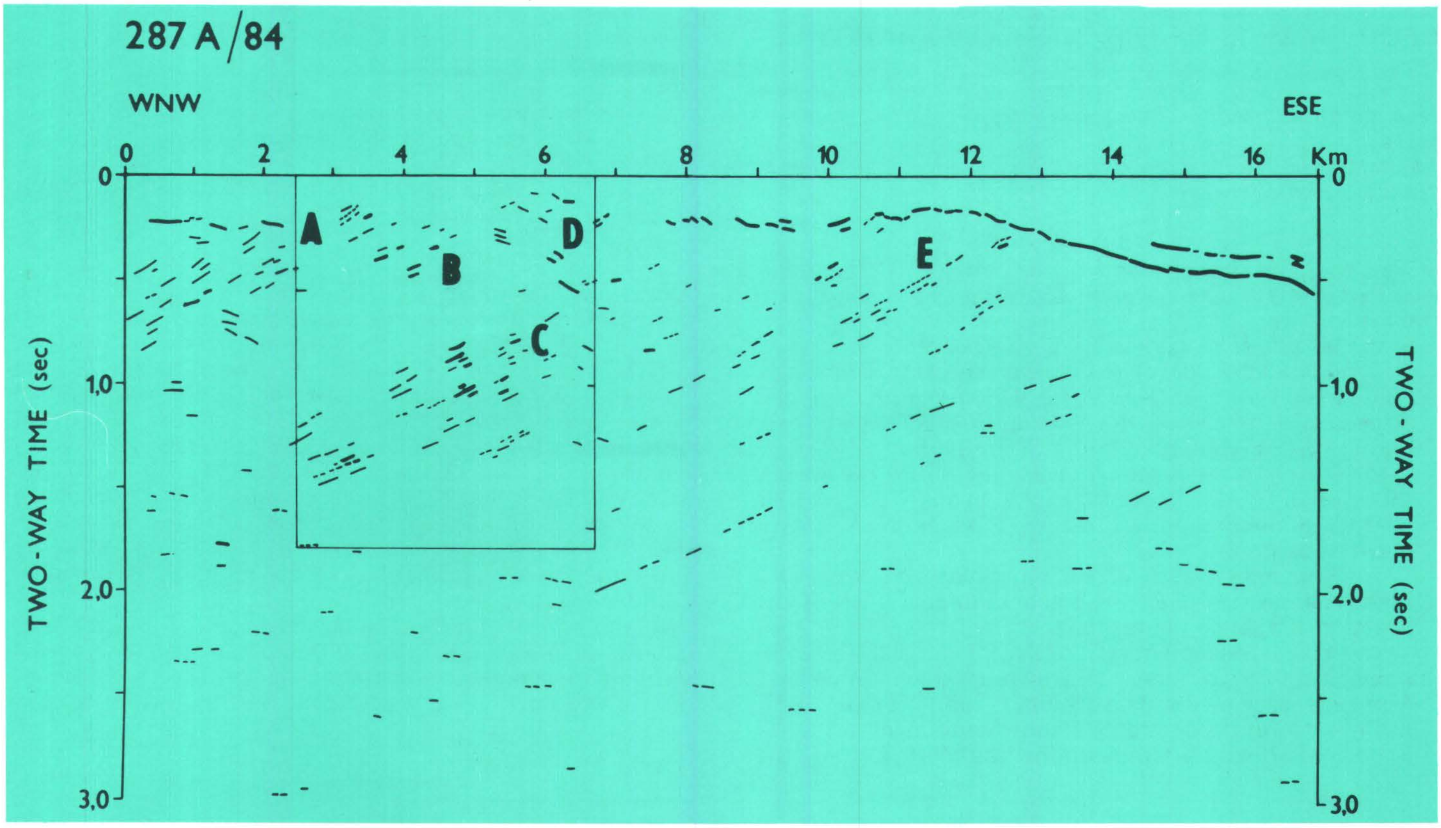
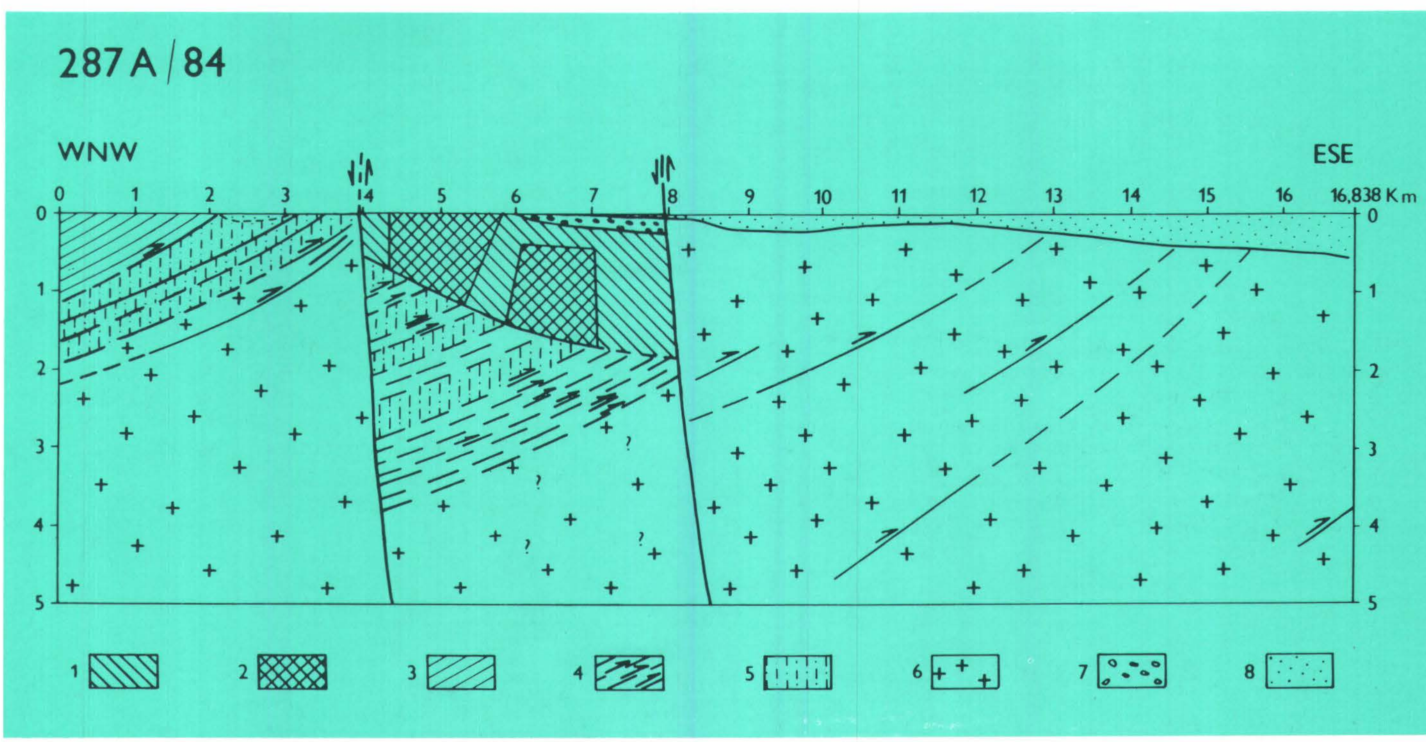


Fig. 3: Selected reflections of the unmigrated time section 287A/84. Significant reflection events described by lettres (see the text).

Fig. 4: Hypothetical geologic section along the 287A/84 profile. Explanations: 1 — Moldanubian granulites, 2 — Moldanubian amphibolites, 3 — Moravicum, 4 — deformed and sheared Brunnia rocks, 5 — Culm, 6 — Brno Massif, 7 — Permian, 8 — Neogene. ▼



zur Auffassung des Charakters und der tektonischen Stellung des Miroslav-Horstes in Südmähren bei. Reflexionsseismische Angaben, geologische Erkenntnisse und die Interpretation anderer geophysikalischer Angaben bezeugen eher das moldanubische tektonische Allochthon (Hypothese von F. E. Sueß) als das moldanubische autochthone Massiv an der Ostseite der Boskovice-Furche. Unter dem moldanubischen (moravischen) Allochthon lagern stark gestörte, durch Scherflächen begrenzte Gesteinskomplexe der Brunnia mit sedimentären Deckformationen des Devons und Kulms. Der Boskovice- und Miroslav-Bruch stellen höchstwahrscheinlich fast vertikale spätpaläozoische, horizontal streichende Längsverwerfungen dar.