



Vydalo Ministerstvo životného prostredia Slovenskej republiky, Bratislava, 1996. Tematický obsah spracovala Geologická služba SR. Autori RNDr. Milan Polák, CSc., prof. RNDr. Stanislav Jacko, CSc., a kol. Aprobácia mapy 3.5.1995. Zodpovedný redaktor RNDr. Milan Polák, CSc. Technický redaktor Roman Fritzman. Kartografický spracovali Roman Fritzman a Jozef Vlachovič. Technická príprava čistokresby Božena Slovákova. Schválené Ministerstvom životného prostredia Slovenskej republiky č. MŽP-3.1/104/96-5.

Súhlas na použitie štátneho mapového diela vydal Geodetický a kartografický ústav, č. 254/55-589/96. Počítačové spracovanie, sadzba a pre-press: Esprit, spol. s r.o., Banská Štiavnica. Tlač: Vojenský kartografický ústav, Harmanec. 1. vydanie. Náklad 1000 kusov.

Topografický podklad: © Úrad geodézie, kartografie a katastra SR, 1996.  
© Ministerstvo životného prostredia SR.

ISBN 80 - 85314 - 62 - 2

# REGIONÁLNE GEOLOGICKÉ MAPY SLOVENSKA

1:50 000

MILAN POLÁK, STANISLAV JACKO ET AL. - 1996

## GEOLOGICKÁ MAPA BRANISKA A ČIERNEJ HORY

## GEOLOGICAL MAP OF THE BRANISKO AND ČIERNA HORA MTS.

GEOLOGICKÁ SLUŽBA SLOVENSKEJ REPUBLIKY - BRATISLAVA

## PREHLAD GEOLOGICKEJ STAVBY BRANISKA A ČIERNEJ HORY

Predkladaná mapa zaberá územie geomorfologických celkov Braniska, Čiernej hory a priľahlých úsekov Volovských vrchov, Hornádskej kotliny, Levočských vrchov, Bachurne, Šarišskej vrchoviny a Košickej kotliny. Determinantom výraznej morfolologickej činnosti regiónu je štruktúrny faktor. Kontroluje rozdielnú orientáciu základných morfoštruktúr tohto územia, ich mikrorelief a distribúciu hydrosiet.

Morfologicky najkontrastnejší fenomén regiónu s.-j. hrasť Braniska je podľa zlomov ssv.-jz. smeru vysoko vyzdvihnutá nad paleogén Levočských vrchov a Šarišskej vrchoviny. Výrazne modelované priečne sedlá a rászochy pohoria zvyčajne sledujú litotektonické rozhrania. Hlavný sz.-jv. hrebeň Čiernej hory rozdeľuje tektonicky pre-disponované údolie Hornádu jv. od Margecian na dva chrty hlboko členené podľa sv.-jv. zlomov. Okrajové úseky regiónu, tvorené paleogénnymi a neogénnymi súvrstvami, sú typické máksim. smerovo nevyhraneným reliéfom.

Územie regiónu má mimoriadne heterogénnu stavbu. Buduje ho temer kompletný sled základných jednotiek internid Západných Karpát, **tatrikum**, **veporikum**, **štúrecký príkrov hronika**, **mladšie paleozoikum gemerika** a **meliatikum**. Dalej sa na jeho stavbe podieľajú súvrstvia vnútrokarpatského paleogénu a neogénu Košickej kotliny.

Horninové sekvencie tatrika Braniska majú generálne v.-z. črnfeské antiklinorium a severogemerické synklinorium v gemeriku. Makroštruktúra a ich výplň sú prevažne penetratívne zošupinatené v jz. ukľonenom systéme kľiváže s výslednou monoklinálnou transpozíciou súvrstvia. Smerovo analogické, popaleogénne posuny prednostne zakladané na ramenách, resp. v axiálnych úsekoch makrovrás priebežným vývojom komplexnej paragenézy disjunktív, včítane priečných sz.-jv. zlomov a duplexových štruktúr, segmentujú sz.-jv. stavbu predmetných jednotiek.

Relikty starších štruktúr sú zachované len rudimentárne. Spodnokriedové štádium násunu príkrovu fixujú trosky štúreckého príkrovu na obalovom meozoiku synklinoria Sivca, resp. na metamorfotoch antiklinória Bystrej v oblasti Slubice, a naložené štruktúry. Paleozoická reaktivácia krýštalínika je doložená zakľnením obalových súvrstvia medzi jeho litostratigrafické jednotky (Bujanov, Tahanovce) i prítomnosťou tektonitov krýštalínika a štúreckého príkrovu a obalu v eocénnych konglomerátach. Mladopaleozoický pôvod metamorfne inverznej stavby veporického krýštalínika indikujú klasty všetkých jeho jednotiek v obalovom vrchnokarbonskom súvrstvi a rádiometrické (Ar-Ar) dáta z metamorfotov krýštalínika.

### TATRIKUM

Je zastúpené len v centrálnej časti s.-j. hrasti Braniska. Jeho **krýštalínikum** odkryté v masive Patrie tvoria vysoko metamorfované krýštalické bridlice a granitoidy. **Obalová jednotka**, zachovaná prevažne pri severnom okraji krýštalínika, je zastúpená len permom a spodným triasom.

### VEPORIKUM

Zaberá južnú polovicu Braniska a celú oblasť Čiernej hory. Tvoria ho krýštalínikum a mladopaleozoicko-meozoická obalová sekvencia. S tatrikom Braniska sa styka tektonicky na sz.-jv. popaleogénnom zlome, ktorý sleduje horný tok Svinky.

### KRYŠTALINIKUM

Trí už varisky superponované litostratigrafické jednotky veporického krýštalínika budujú podstanú časť antiklinória Bystrej. V jeho spodnej časti lodinskom komplexe prevládajú viacnásobne prevrásnené a monoklinálne (na JZ) zošupinatené diafortizované pararuly so sporadickými polohami amfibolitov, svorov a fylonitov. Strednú časť miklušovský komplex - vystupujúci najmä pri sv. okraji antiklinória, tvoria prevažne diafortizované migmatity s intrafoliačnými telesami leukogranitov. Vrchnú jednotku komplex Bujanovej v typickom vývoji (na jz. svahoch Bujanova) tvoria granodiority, auto-metamorfovaný granit, migmatity, ruly, amfibolity a fylonity.

### MLADŠIE PALEOZOIKUM

Je zastúpené biostratigraficky nedatovanými kontinentálno-detritickými súvrstvami vrchného karbónu a permu. Vrchnokarbonské metakonglomeráty a metapieskovce sú vyvinuté len pri sv. okraji krýštalínika miklušovského komplexu. Sedimenty permu tvoria kontinuálnu bázu obalu krýštalínika. Korelujeme ich s lubietovskou skupinou veporika. Jej brusnianskemu súvrstviu patrí sivofialovo farbený súbor drôb, bridlic a zlepcov s lokálnymi polohami Ca/Na vulkanitov. Zelenosivá nadložná predajniarske súvrstvie obsahuje pieskovce a bridlice.

### TERCIÉR

Terciérne sedimenty regiónu transgresívne nasadajú na staršie útvary v sv. úseku regiónu a patria prevažne k vnútrokarpatskému paleogénu. Neogén Košickej kotliny pokrýva niektoré úseky pri východnom a južnom okraji regiónu.

### Paleogén

?Paleocénnooligocénne konglomeráty, resp. pieskovce a prachovce najstaršieho súvrstvia - borovského - lemuju predterciérne jednotky veporika i tatrika regiónu. Nad nimi sú vyvinuté vyššie súvrstvia hutianske (vrchný eocénoligocén), resp. zuberecké súvrstvie rovnakého veku. Flyšovú sekvenciu uzatvárajú konglomeráty a pieskovce bielopotockého súvrstvia.

### Neogén

## A REVIEW OF GEOLOGICAL STRUCTURE OF BRANISKO AND ČIERNA HORA MTS.

Presented geological map comprises the following geomorphological wholes: Branisko Mts., Čierna Hora Mts. and adjacent parts of the Volovské vrchy hills, Hornádska kotlina depression, Levočské vrchy hills, Bachurná Mts., Šarišská vrchovina hills and Košická kotlina depression. The features like morphological dissection of the area, variations in the orientation of its basic morphostructures, their microrelief and the distribution of drainage network are all controlled by its geologic structure.

The region is characterised by extraordinarily heterogeneous structure, composed of almost complete sequence of basic units of the Western Carpathians intermed, the Tatricum and Veporicum Units, the Šturec nappe of the Hronicum Unit, the Late Paleozoic of the Gemicum Unit and the Meliaticum Unit. Furthermore, the formations of inner Carpathian Paleogene and Neogene of the Košická kotlina depression take also their shares in its structure.

In the northern part of the mountain, approaching the contact with the Šturec nappe, the rock sequences of Tatricum part of the Branisko Mts. strike generally E-W, reflecting a progressive trend of Alpine compression and a dissection into segments by NW-SE and NNE-SSW faults. The basic structural elements are the Upper Cretaceous NW-SE vergent fault structures, composed of the Veporic Bystrá anticlinorium and the Sivec synclinorium, and of the Gemic Črmeľ anticlinorium and North Gemicum synclinorium. The macrostructures and their filling are predominantly penetratively deformed to form scales within a SW dipping cleavage system, which resulted in a monoclinial transposition of the formations. Analogous, in terms of their strike, are the Post-paleogene normal slip faults, founded primarily on the fold limbs, or on axial parts of macrofolds, respectively, with subparallel development of a complex paragenesis of disjunctive faults, including the oblique NW-SE faults and duplex structures, which cut the NW-SE oriented structure of the above units into segments. Of the older structures there are only rudimentary relics left behind. The Lower Cretaceous age of the nappe overthrusting is testified by the Šturec nappe outliers on the Mesozoic envelope of the Sivec synclinorium, or, in the area of Slubica, respectively, on metamorphic rocks of the Bystrá anticlinorium, while the suprimposed structures and Paleozoic reactivation of crystalline rocks is documented by wedging-in of the envelope formations between its lithostratigraphic units (Bujanová, Tahanovce), as well as by tectonized crystalline and Šturec nappe rocks pebbles and the envelope rock pebbles contained in the Eocene conglomerates. Late Paleozoic origin of this, in metamorphic terms, an inverted structure of the Veporicum crystalline, is indicated by the occurrence of clasts of all its units found in the envelope Upper Carboniferous formations, as well as by radiometric dating (Ar-Ar) obtained from metamorphic crystalline rocks.

### TATRICUM UNIT

This unit extends only over the central part of the N-S horst of Branisko Mts. Its crystalline rocks, made of high metamorphosed crystalline schists and granites, are exposed in the Patria massif. The only representatives of the envelope unit are the Permian and Triassic rocks preserved mostly at the northern margin of the crystalline massif.

### VEPORICUM UNIT

This unit, composed of the crystalline rocks and the Late Paleozoic - Mesozoic envelope sequence, occupies southern half of the Branisko Mts. and entire area of

### HRONICUM UNIT

The basal Upper Carboniferous-Permian sequence of the Šturec nappe of the Hronicum Unit has only been preserved in outliers, which rest over the Veporic envelope Mesozoic as well as over crystalline rocks (Sivec synclinorium, southern slopes of Slubica), or also over the crystalline rocks of the Branisko Mts. (Branisko gap, or saddle?). In its most complex development near the northern margin of the Branisko Mts., it commences with the Upper Carboniferous and Permian clastics of the Nižná Boca Formation, or of the Malužina Formation, respectively.

The Mesozoic, represented predominantly by quartzite of the Benkovské Formation, overlies the former. This is overlain by variegated Kampilian shales, which are, in turn, succeeded by Anisian guttenstein limestones and Ladinian Ramsau dolomites. The Vysný Slavkov beds are represented by dark-grey limestones with shales (Julian - Lower Tuvallian?). The Carnian stage is represented by Lunz beds and the Carnian-Norian by the Hauptdolomite.

### GEMERICUM UNIT

The structure of NW margin of the region is shared by Carboniferous and Permian rocks sequences. They contact the Veporicum of the Čierna Hora Mts. along the Margecany tectonic shear zone, or along subparallel Postpaleogene faults (in Kluknavská kotlina depression), respectively.

Epimetamorphosed Lower Carboniferous formations are represented in the Črmeľ Group. The phyllitized products of reductive psammito-pelitic sedimentation (graphitic phyllites, lydites are developed in its lowermost part. In the course of gradual opening of the supply channels for basaltoidic magmatism there was formed a mighty volcanogenic-sedimentary sequence of graphitic-pelitic sediments with the ratio of basalts and their volcanoclastics increasing upwards. The sedimentation has been terminated by the development of bituminous and bitumino-carbonate pelites, locally with reef carbonates.

The Uper Carboniferous is represented by clastic sediments of the Rudňany and Hámor Formation of the Dobšiná Group. A basal horizon of coarse-grained conglomerates of the Rudňany Formation overlies discomformably various members of the SW limb of the Črmeľ anticlinorium. In its overlier there are developed discontinuous polymict sandstones with graphitic shales. Stratigraphically higher, the Hámor Formation, made of sandstones and graphitic shales, is characterized in its final sedimentation phase by an increased ratio of oligomict conglomerates.

### Permian

In this region the Gemicum Permian is represented by its Krompachy Group. Polymict conglomerates and sandstones of the basal Knola Formation are developed in tectonically reduced beds in the section Margecany-Črmeľ. The rhyolites, dacites, their volcanoclastics, variegated sandstones and shales of the Petrova

### LATE PALEOZOIC

It is represented by continental detritic Upper Carboniferous and Permian formations. No biostratigraphic dating has been made so far.

Upper Carboniferous metaconglomerates and metasandstones have only been developed near the NE margin of the Miklušovce Complex. The Permian sediments make up the sedimentary base of the crystalline complex envelope. We correlate them with the Lubietová Group of the Veporicum Unit. A grey-violet coloured sequence of greywackes and conglomerates with local Ca/Na volcanics belongs to its Brusno Formation. Green-grey tinted Predajná Formation in the overlier contains sandstones and shales.

### MESOZOIC

The envelope Mesozoic of the Veporicum Unit has many lithostratigraphical features in common with the Veľký Bok series of the Nízke Tatry Mts., whose age spans the time from Lower Triassic to Malm. A typical development can be found in the Hrabkov block, in the Sivec synclinorium and in southern part of the Branisko Mts. A typical feature is an intense dynamometamorphism of its basal members and of the Jurassic formations.

### Triassic

Beginning with a formation of quartzose sandstones and shales this period continues with the platform carbonates of Anisian and Ladinian age. This is followed by the Upper Triassic characterized by discontinuous development of the Lunz beds, mainly dolomite, occasionally with Carpathian Keuper. Rhaetian black limestones and shales occur south of the Hrabkov as well as in the Branisko Mts.

### Jurassic

Jurassic, predominantly a carbonate sequence overlies Triassic rocks. Its Liassic sandy, cherty and crinoid limestones of the Sivec synclinorium do not contain Upper Liassic mottled limestones and shales. The age of these pastel coloured radiolarian limestones with chertstones corresponds to Dogger. We rank their higher, often marbled and locally radiolarite containing equivalents, with Dogger - Malm.

Hora Formation make up the bulk of the Gemic Permian in the region. The Novohradské Formation - variegated shales, sandstones, conglomerates, evaporites crop out north of Krompachy.

### MELIATICUM UNIT

The marginal part of NE slice of the Meliaticum Unit crops out in the core of North-gemic synclinorium, in the Margecany-Zlatník section. In the area SE of the Veľký Folkmar it is tectonically reduced into a string of discontinuous belts, or lenses, respectively. The age of its variegated shales, sandstones, limestones, metabasals and radiolarites may be Triassic and Jurassic.

### TERTIARY

In the NE section of the region the Tertiary sediments belonging predominantly to Inner-carpathian Paleogene progressively overlie the older formations. The Neogene of the Košická kotlina depression covers some areas near the eastern and southern margin of the region.

### Paleogene

Paleogene - Paleocene ?) Oligocene conglomerates, or sandstones and siltstones of the oldest part of Borové Formation, respectively, fringe in the region the Pre-Tertiary Veporicum and Gemicum units. They are overlain by a development of higher formations - the Huty claystones (Upper Eocene - Oligocene), or by the coeval Zuberec flysch sequence, respectively. Flysch sedimentation terminates by conglomerates and sandstones of the Biely Potok Formation.

### Neogene

Neogene sediments commence with the Karpatian Lemešany conglomerates of the Teriakovce Formation and with claystones, or siltstones, respectively, of the Kladzany Formation. The Upper Badenian and Lower Sarmatian are represented by the Varhaňovce gravels and by redeposited rhyolite tuffs of the Klčov Formation.

### QUATERNARY

Broad stratigraphic range, small genetic variability and extent of Quaternary sediments and dissected relief - all these features testify that during Quaternary there prevailed in the region an uplifting tendency.

The proluvial sediments, as the most widespread, often accumulate in the areas with „neo-active“ faults and indicate, together with the faceted ravines, that they were active during Quaternary.