MINISTRY OF ECOLOGY AND NATURAL RESOURCES OF UKRAINE

STATE GEOLOGICAL SURVEY

STATE GEOLOGICAL MAP OF UKRAINE

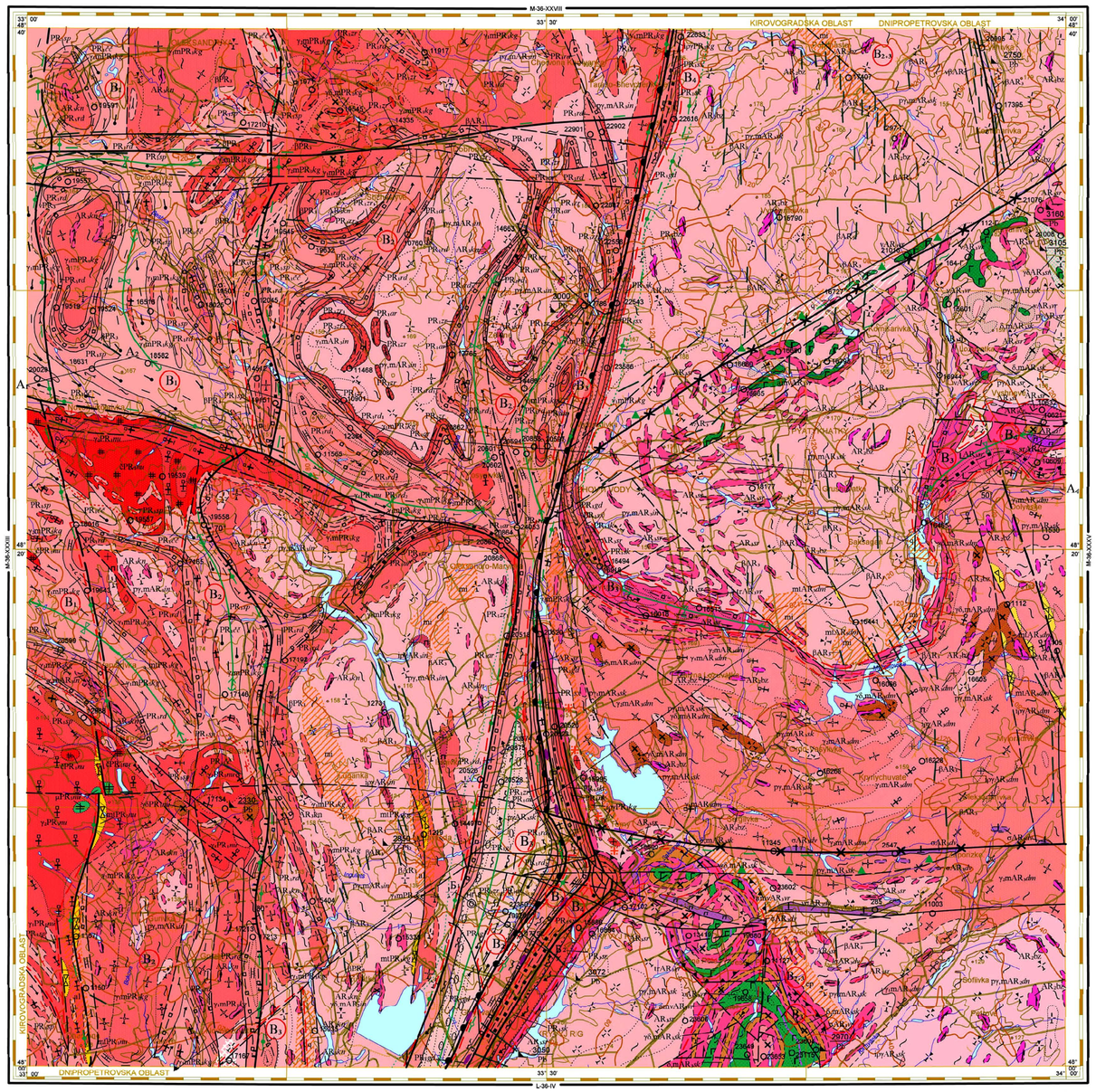
Scale 1:200 000

GEOLOGICAL MAP OF CRYSTALLINE BASEMENT

Central-Ukrainian Series

M-36-XXXIV (Zhovti Vody)

2000 — 2002



The map is created in the State Geological Enterprise "Pivdenukrgeologiya" to order of the Department of Geology and Subsurface Use of the Ministry of Ecology and Natural Resources of Ukraine
Author: V.V.Zakharov
Editor: M.S.Kurlov

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Expert of the Scientific-Editorial Council: B.Z.Berzenin
English translation: B.I.Malyuk

1: 200 000

2 kilometres in 1 centimetre

km 4 2 0 4 8 12 km

Solid horizontals are put through 40 metres

The map is designed and printed by the Ukrainian State Geological Research Institute (UkrSGRI)
Design editors: I.category eng.-cartographer L.V.Kovalchuk, geologist G.G.Golubeva, leading eng.-cartographer K.N.Kolychuk

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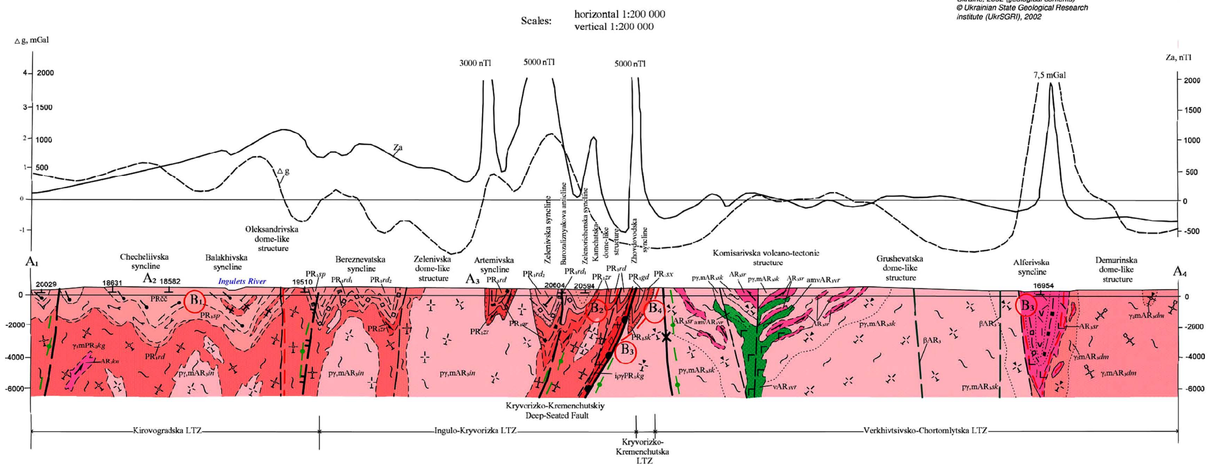
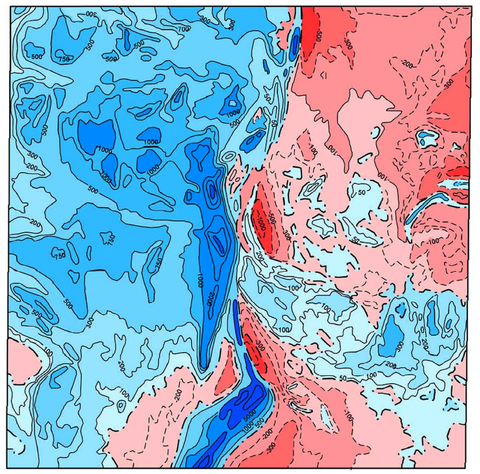
GEOLOGICAL CROSS-SECTION BY LINE A_1 – A_4

Scales: horizontal 1:200 000
vertical 1:200 000



MAP OF ANOMALOUS MAGNETIC FIELD



1:500 000

5 kilometres in 1 centimetre

km 10 5 0 10 20 30 km

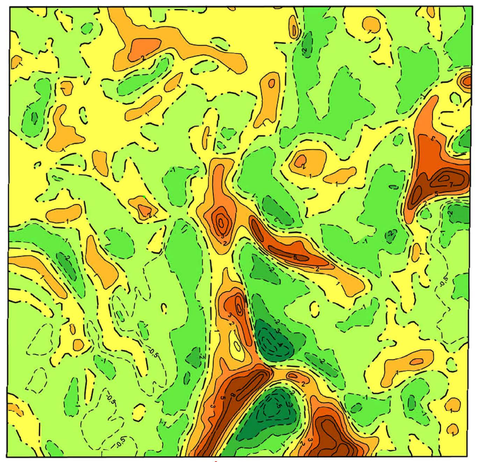
lower -500 -300 -100 0 100 300 500 1000 5000 higher

Isodynames Za in nTl

—100— Positive — · — · — Zero – – -100- – Negative

SCHEME OF THE LOCAL GRAVITY ANOMALIES

(△ gloc = △ g obs − △ g2km!)



1:500 000

5 kilometres in 1 centimetre

km 10 5 0 10 20 30 km

lower -3 -2 -1 0 1 2 3 5 higher

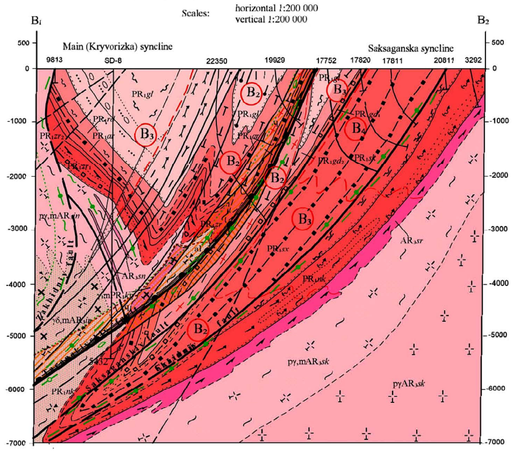
Isolines △g in mGal

—1— Positive – – -2- – Negative — · — · — Zero

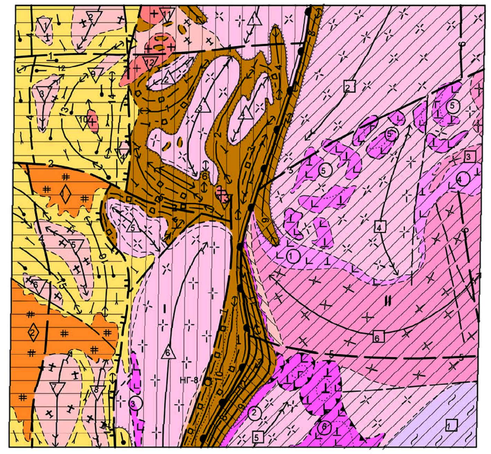
GEOLOGICAL CROSS-SECTION BY LINE B_1- B_2

(through Kryvorizka Super-Deep Borehole)

Scales: horizontal 1:200 000
vertical 1:200 000



TECTONIC SCHEME



1:500 000

5 kilometres in 1 centimetre

km 10 5 0 10 20 30 km

LEGEND

TECTONIC ZONATION

I. INGULO-INGULETSKIY AREA — II. MIDDLE-DNIPREAN AREA

UPPER (PROTEROZOIC) TECTONIC FLOOR

- Kirovogradska litho-tectonic zone
- Kryvorizko-Kremenchutska litho-tectonic zone (transitional)
- Inguletsko-Kryvorizka litho-tectonic zone (transitional)

LOWER (*ARCHEAN*) TECTONIC FLOOR

- Verkhivtsivsko-Chortomlytska litho-*tectonic* zone

LITHO-TECTONIC COMPLEXES OF THE LOWER (ARCHEAN) FLOOR

I. GREENSTONE SYNCLINE STRUCTURES AND THEIR CONSTITUTING ROCK ASSOCIATIONS

1. Linear-type rift-synclines (Zhovtovodska - 1, Kryvorizka - 2, Karachunovsko-Lozovatska - 3, Alferivska - 4) filled mainly with low-grade rocks of associations: a - komatiite-basalt, b - komatiite-basalt and rhyodacite

2. Central-type volcano-tectonic depressions (volcano-depression groups - Komisarivska - 5, Yavdotivska - 6) filled mainly with low-grade rocks of associations: a - komatiite-basalt, b - komatiite-basalt and gabbro-peridotite

II. GRANITOID DOME-LIKE STRUCTURES AND THEIR CONSTITUTING ROCK ASSOCIATIONS

1. Relicts of proto-crust arc uplift (Bazavlutske - 1) composed of mafic-tonalite rocks

2. Diapiroid domes and rheo-morphic plutons (Pyatykhatskiy - 2, Verkhivtsivskiy - 3, Grushevatskiy - 4, Saksaganskiy - 5) composed of the rocks of plagiogranite-migmatite association

3. Remobilized plagiogranite domes (Demurinskiy - 6) composed of the rocks of granite-migmatite association

LITHO-TECTONIC COMPLEXES OF THE UPPER (PROTEROZOIC) FLOOR

I. GRABEN-SYNCLINE STRUCTURES AND THEIR CONSTITUTING ROCK ASSOCIATIONS

1. Linear, keel-like synclines of Inguletsko-Kryvorizka and Kryvorizko-Kremenchutska LTZs (Ovnyanska - 1, Zelenivska - 3, Zhovtyanska - 4, Bereznevatska - 5, Artemivska - 6, Petrivska - 7, Popelnastivska - 8, Zhovtovodska - 9, Osnovna Kryvorizka - 10, Skhidnogannivska - *11*, Saksaganska - *12*) filled mainly with medium-grade rocks of distinct rock associati

2. Oval trough-like synclines of Kirovogradska LTZ (Golovkinska - 12, Chechelivska - 13, Balakhivska - 14, Varvarivska - 15, Chervonokonstantynivska - *16*, Rodionivska - 17) filled mainly with high-grade rocks of flyschoid (carbonate-terrigenous and terrigenous) rock associations

II. GRANITOID DOME-LIKE STRUCTURES AND THEIR CONSTITUTING ROCK ASSOCIATIONS

1. Dome-like ledges of consolidated blocks (Chervonokamyanskiy - *1*, Ovnyanskiy - 2, Zelenivskiy - 3, Zhovtyanskiy - 4, Petrivskiy - 5, Ingulet-skiy - 6) composed of Archean plagiogranite-megmatites, partly re-mobilized in Proterozoic

2. Granite-migmatite dome-like ledges or uplifts (Semenivskiy - 1, Zvenigorodskiy - 2, Olimpiadivskiy - 3, Oleksandrivskiy - 4, Vershyno-Vlasivskiy - 5, Varvarivskiy - 6, Gurivskiy - 7, Gruzskiy - 8) comprising almost completely re-mobilized blocks of Archean basement

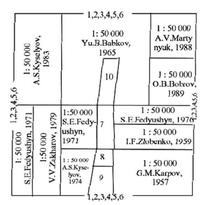
3. Granite-migmatite dome-like massifs (Pishchanobrodskiy - 9, Starodubskiy - 10, Kukolivskiy - *11*, Dobronadiivskiy - 12, Zelenogayskiy - 13) formed under metamorphogenic granitization of Proterozoic sedimentary units

III. TECTONO-MAGMATOGRENIC STRUCTURES AND THEIR CONSTITUTING ROCK ASSOCIATIONS

- Fault-side zoned massifs of charnockite-granitoid composition (Verblyuzkiy - 1, Bokovyanskiy - 2)
- Kryvorizko-Kremenchutskiy Deep-Seated Fault of thrust-underthrust type (inside Kryvbas - Tarapakivskiy Fault) - boundary of Ingulo-Inguletskiy (I) and Middle-Dniprean (II) geological areas of Ukrainian Shield
- Inguletskiy regional fault (normal-type) separating Kirovogradska and Ingulo-Kryvorizka litho-tectonic zones of Ingulo-Inguletskiy area
- Other regional faults: Dobronadiivskiy - 1, Verblyuzskiy - 2, Komisarivskiy - 3, Zakhidno-Inguletskiy - 4, Devladivskiy - 5, Lykhivsko-Myloradivskiy - 6 branches of Kryvorizko-Kremenchutskiy Deep-Seated Fault in Kryvbas: Zakhidniy - 7, Saksaganskiy - 8, Skhidniy - 9
- Local faults
- Fragments of the arc and ring fault systems bounding volcano-tectonic structures
- Fold axes (first-order) and their numbers: a - synform, b - antiform
- Boundaries of rock association groups and rock complexes
- Boundaries between the even-age rocks (associations)
- Boundary between Archean and Proterozoic tectonic floors
- SD-8 Kryvorizka Super-Deep Borehole

SCHEME OF THE CENTRAL-UKRAINIAN SERIES MAP SHEETS LOCATION

SCHEME OF MATERIALS USED



Scale 1:200 000

1 - V.K.Botyrin, 1985; 2 - I.Y.Zolotaryova, 1985; 1988.3 - B.Z.Berzenin, 1988; 4 - V.V.Zakharov, 1998

Scale 1:50 000

5 - B.M.Rogoyavlenskiy, 1969, 1975; 6 - E.V.Zykov, 1971, 1975, 1980, 1988; 7 - V.P.Zhuk, 1986

Scale 1:25 000

8 - M.G.Efimenko, 1978; 9 - M.S.Kurlov, 1998; 10 - V.M.Zinchenko, 1982, 1994