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GEODYNAMICS OF FORMATION OF THE TRANSITION ZONE BETWEEN THE DNIEPER-DONETSK BASIN AND THE DONBAS FOLDBELT. TECTONIC INVERSION OF RIFT-LIKE STRUCTURE

The article studies the system organization of inversion tectonic deformations of the Dnieper-Donetsk Basin which covered the territory of the Western Donetsk Graben. The research uses the kinematic and structural-paragenetic analysis of inversion structural transformation of the folded floors of the sedimentary cover of the Graben. The original model of tectonic inversion of the Dnieper-Donets Basin was completed from the previous models. The tectonic inversion of the Dnieper-Donets Paleorift rift-like structures began at the late Hercynian stage in the geodynamic environment of the territory of the Eastern European Platform general collision. Tectonophysical analysis shows that the inversion folding was formed by the mechanism of sedimentary horizons longitudinal bending in the environment of the interference of the intraplate submeridional collision compression and the regional strike-slip stress field. At the Mesozoic-Cenozoic stage, tectonic inversion continued in the field of right-hand strike-slip deformations with a variable compressive component. This caused the formation of folded covers of tectonic plates and scales in the uplift-thrust mode. They, Hercynian neo-autochthonous formations and further the weakly located syneclise autochthon of the South-east of the Basin. The pressure of the "tectonic stamp" geoblock of the Donetsk Foldbelt contributed to the formation of the Segment body of geomass Tectonic Wedging. It was diagnosed with a structural orocline of transverse extension of the sliding type. Large linear throw-folded zones were formed within geodynamic bands of injection and displacement of geomass along the front of the orocline. The tectonic compression fan, characteristic of geodynamic compression zones, was formed in the foreland of the orocline, on the ends of the main thrusts. They served as "tectonic rails"of the allochthon invasion within the rift-like structure. There are the transverse zones of tectonic sutures formed on the roots of the folding covers of the Hercynian neo-autochthon thrusting, which are located in the hinterland of the orocline in the Foldbelt Western slope. The study completed an original kinematic model of tectonic inversion of the transition zone between the Dnieper-Donets Basin and Donets Foldbelt. According to the model, the pressure of the "tectonic stamp" geoblock initiated the invasion of the Segment of Tectonic Wedging which consists of the intensively dislocated allochthonous geomass. The Segment destroyed the rift-like structure and formed the Western Donetsk Cover-Folded Region in the South-eastern part of the Basin. The system organization model of inversion complications of the rift-like structure in the territory of the Western Donetsk Graben will allow to improve the regional geological schemes of tectonic oil and gas zoning.

Key words: tectonic inversion; collision compression zones; structural deformations; orocline of transverse extension of the sliding type; Segment of Tectonic Wedging of geomass; Western Donetsk Cover-Folded Region.

Introduction

It is established that the tectonic inversion of the Dnieper-Donets Basin (DDB) took place in geodynamic conditions of interference of the submeridional intraplate collision with the regional horizontal-shear stress field [Bartashchuk, 2016, 2019, 2019, 2020, Gonchar, 2019]. The environment of sedimentary strain deformation is characterized by sublatitudinal tilt of the tensile stress axis and compression stresses with tilt of the axis in the submeridional directions, including: South-west (Zaal and Pfaltz phases of the Late Hercynian stage of tectogenesis), North (Laramian phase of the Alpine stage) and North-east direction (Attic phase of the Alpine stage) [Korchemagin, Ryaboshtan, 1987, Goryainov, 1999, 2004, Kopp, Kolesnichenko, Vasiliev, etc., 2017]. There are three separate structural folded floors formed by the lattices of thrusts and uplift-shifts of the corresponding vergence during these phases of deformation in the transition zone between DDB and Donetsk Foldbelt (DF) [Goryainov, Sklyarenko, 2017].

The tectonic inversion and the first phase of folding began the Late Hercynian ogenesis (middle-end of early Permian) in the South-eastern part of DDB in the Western Donetsk Graben (WDG) [Popov, 1963, Khain, 1977 Korchemagin, Erabo , 1987, Dudnik, Korchemagin, 2004, Kopp, Korchemagin, 2010, Kopp, Kolesnichenko, Vasiliev et al., 2017, Meijers et al., 2010]. Collision deformations of the rift-like structure occurred when the inclination of the axis had a southwest direction in the mode of oblique left-hand collision in the stresses field. They were influenced by tectonic movements of the Northern flank of the collision orogen, located on the active plate Paleotetis Ocean [Gonchar, 2019].

The strike-slip field with a variable component of tangential compression of right-hand kinematics of movements were formed in DDB at the main stage of tectonic inversion in the Mesozoic-Cenozoic. It was characterized by horizontal displacements of sedimentary geomass and right-shear deformation paragenesis [2004, Gintov, 2005, Gonchar, 2019]. The progression of the collision compression deformation caused the repeated invasion of the intensively deployed sedimentary geomass to the Northwestern direction. The flexural complications of primary linear Hercynian folded forms were leded inside the limited geological space of the WDG. [Goryainov, Sklyarenko, 2017, Bartashchuk, 2019].

Analysis of previous research

The structural peculiarities of the inversion tectonic style and the natural kinematic mechanism of tectonic inversion of the rift-like structure were identified on the actual materials of geomapping of the transition zone between DDB and DF at previous stages of the regional geotectonic research.

The structural analysis of the latest geo-mapping data of the transition zone provided an opportunity to find out that the specific inversion tectonic style of deformations of WDG was formed due to the collision warping of the sedimentary cover horizons. The inversion tectonic style of the transition zone is characterized by reverse immersion of the Late Hercynian, Laramian and Attic folded structural floors in the Northwestern direction along the echelons of thrusts. However, the rifting tectonic style of DDB is characterized by the regional Southeastern direction of immersion of platform sedimentary cover complexes of transverse fault systems. This geological phenomenon is due to the postsedimen-tation increase in the thickness of the sedimentary cover caused by the growth of the syneclise section by allochthonous geomass. The anomalous volume of folded floors accumulated inside the WDG limited geological space by the kinematic mechanism of covering fold formation (Fig. 1).

The folded sedimentary geomass approached from the DF to the Northwest within the weakly deployed Hercynian neoautochthonous and further inside the syneclise autochthonous under the pressure of the undergoing “tectonic stamp” of DF (Fig. 2). The body of the Western Donetsk Segment of Tectonic Wedging, first defin ed by the author, was formed inside the rift-like structure of the transition zone (Fig. 3) [Bartashchuk, 2019]. The Segment was identified as an tectonic orocline of the transverse extension of the sliding type in the tectonophysical sense according to the classification of strike-slip tectonic deformations [Kopp, 1991].

Structural and kinematic analysis of geomapping data diagnosed the natural kinematic mechanism of tectonic inversion of the rift-like structure. There were flexural deformations of primary linear Hercynian folds with the formation of Laramian folds anduncompensated deflection as well as significant increase of the sedimentary cover thickness in the geodynamic environment of thrusting, sliding of geomass in the limited geological space of the Graben. The Western Donetsk Cover-Folded Tectonic Region was finally formed inside the rift-like structure in the transition zone by the kinematic mechanism of orocline extension which is a structural expression of tectonic inversion of DDB (the basic model of the structure is shown in Fig. 1, 2) [Bartashchuk, 2019].

The purpose of research

The aim of the research is to identify the natural mechanism of tectonic inversion of DDB by studying the system organization of collision deformations of rift-like structure.

Materials and methods of research

The original method of reconstruction of tectonic stress and strain fields and tectonophysical analysis of geostructures was applied for region geotectonic research DDB [Bartashchuk, 2016, 2019]. The tectonic map of Ukraine [Kruglov & Gursky, 2007], the map of vertical amplitudes of neotectonic movements (Holocene stage) [Polivtsev, 2008], the map of faults and main zones of lineaments of the Southwest of the USSR (by the Space research data) "scale 1:1 000 000 (editor M. Krylov, 1988)was used as the analytical cartographic data.

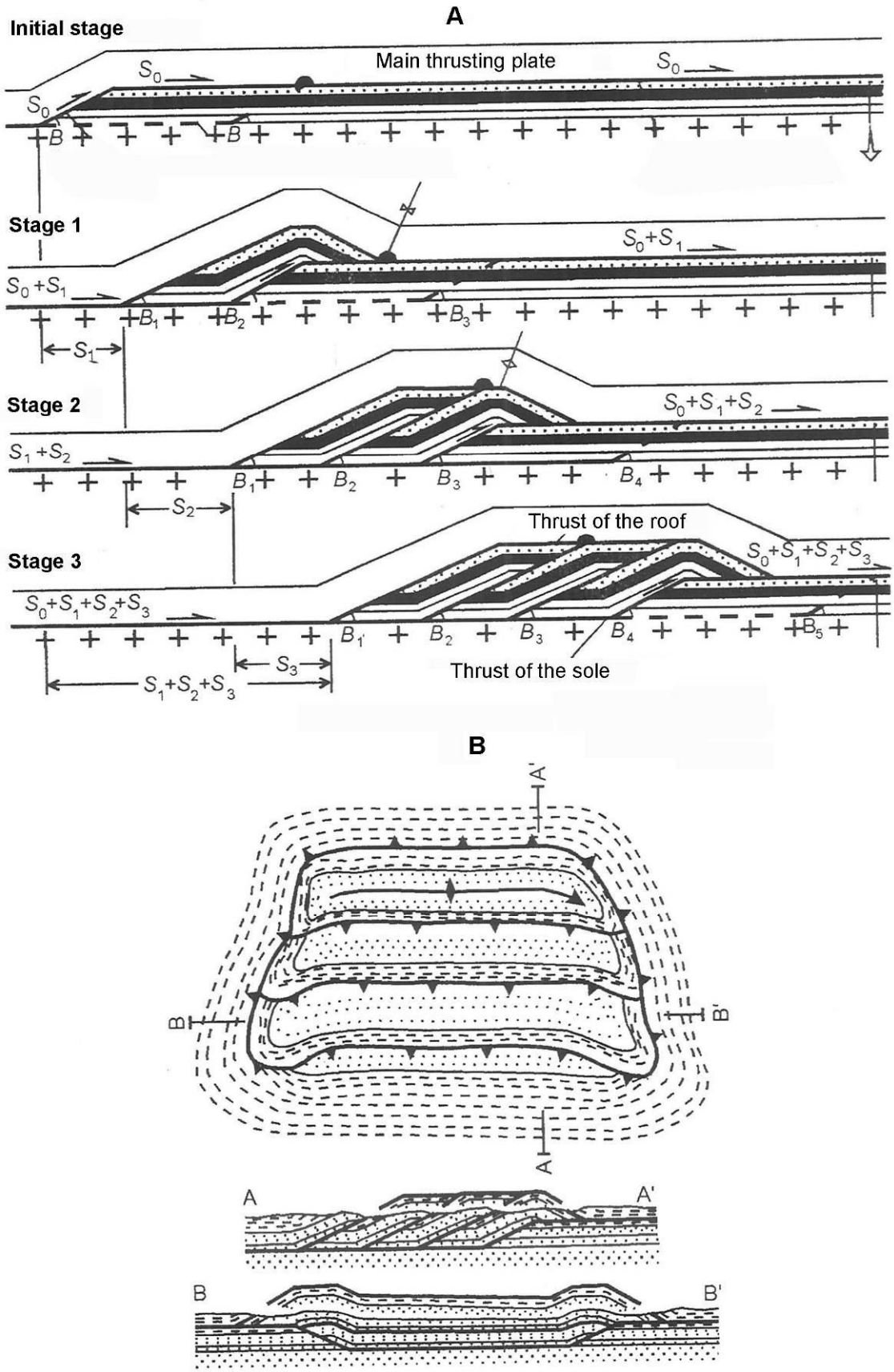

Fig. 1. Schemes: A – the kinematic mechanism of non-sedimentary increase of the total thickness of the sedimentary cover due to the formation of new cover plates; B – structure of cover-folding system of geomass thrusting: plan and section, by [Moody & Hill, 1960]

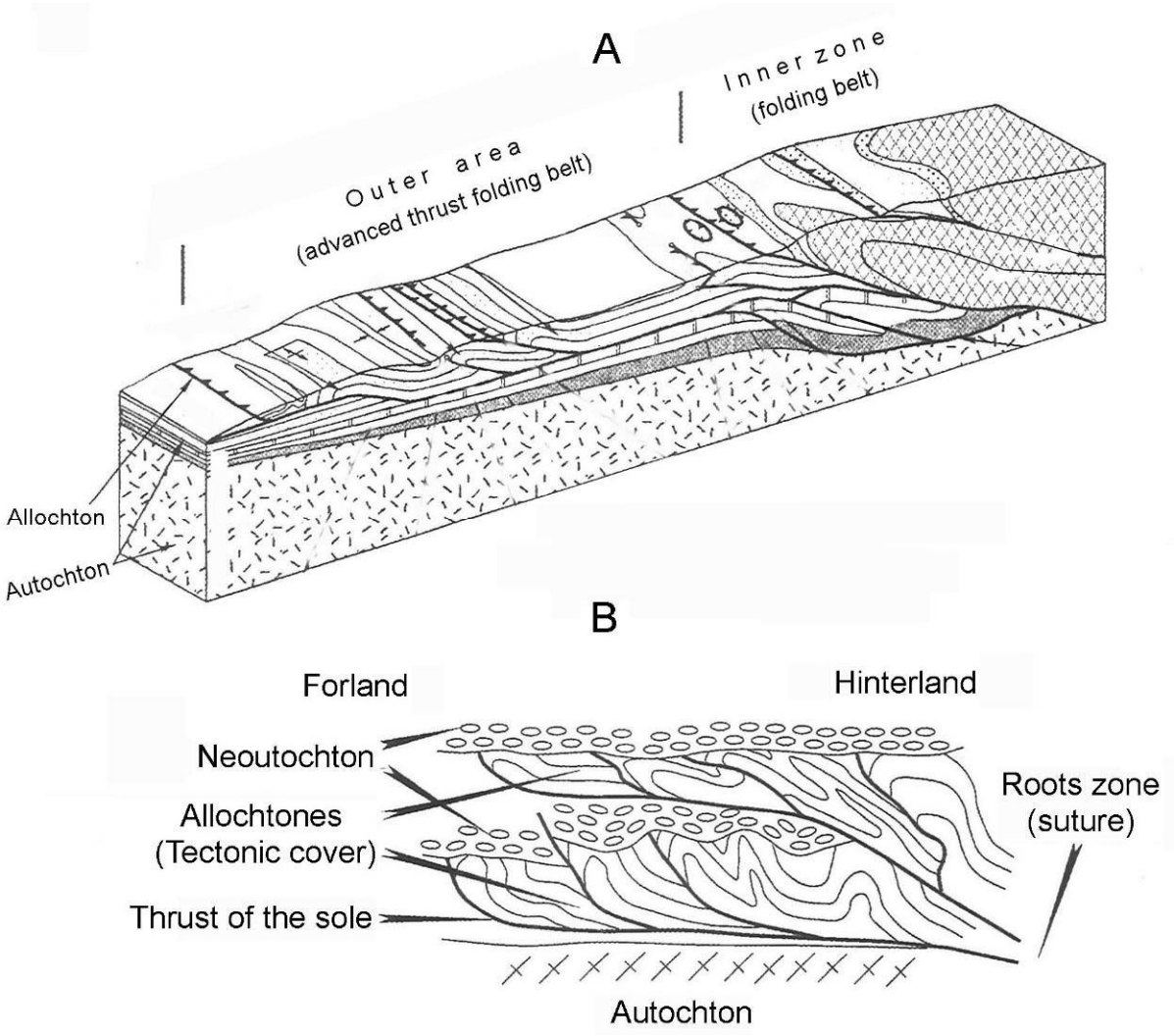

Fig. 2. Scheme of the structure of the cover-fold system:
a – block diagram; b – section, by [Moody & Hill, 1960]

Research results

Analysis of geomapping data allows us to draw the following conclusion: the features of the tectonic structure of the transition zone have direct signs of intense deformation of the horizontal displacement [Bartashchuk, 2019]. Orogenic movements took place in the DF at the Laramian and Attic stages of Alpine tectogenesis. They occured in the conditions of transverse compression by the inclination of the compression axis in the North-western direction in the environment of uplift-thrusting and moderate sublatitudinal stretching in the strike-slip field of right-hand movements. The geodynamic conditions were created due to the formation of the area of maximum compression of the North-west orientation in the central part of the WDG. The movement of the geomass of the sedimentary cover to the northwest began within the DDB.

On these grounds, an attempt was made to restore the natural kinematic mechanism of tectonic inversion. It is the basis of the original geodynamic model of the formation of the transition zone [Bartashchuk, 2019]. According to the model, at the Mesozoic-Cenozoic stage of tectonic inversion, the general tectonic transport of geomass was carried out from the compressed axial zone of WDG to the zones of geodynamic shadow, in the direction of the Oryl depression of DDB and to the onboard zones of Graben. Horizontal movements of geomass contributed to the formation of curvilinear coulisse articulated throw-folded structural paragenesis in the primary linear Hercynian deformation zones of chipping and formation of a regional cover-folded system of tectonic thrust.

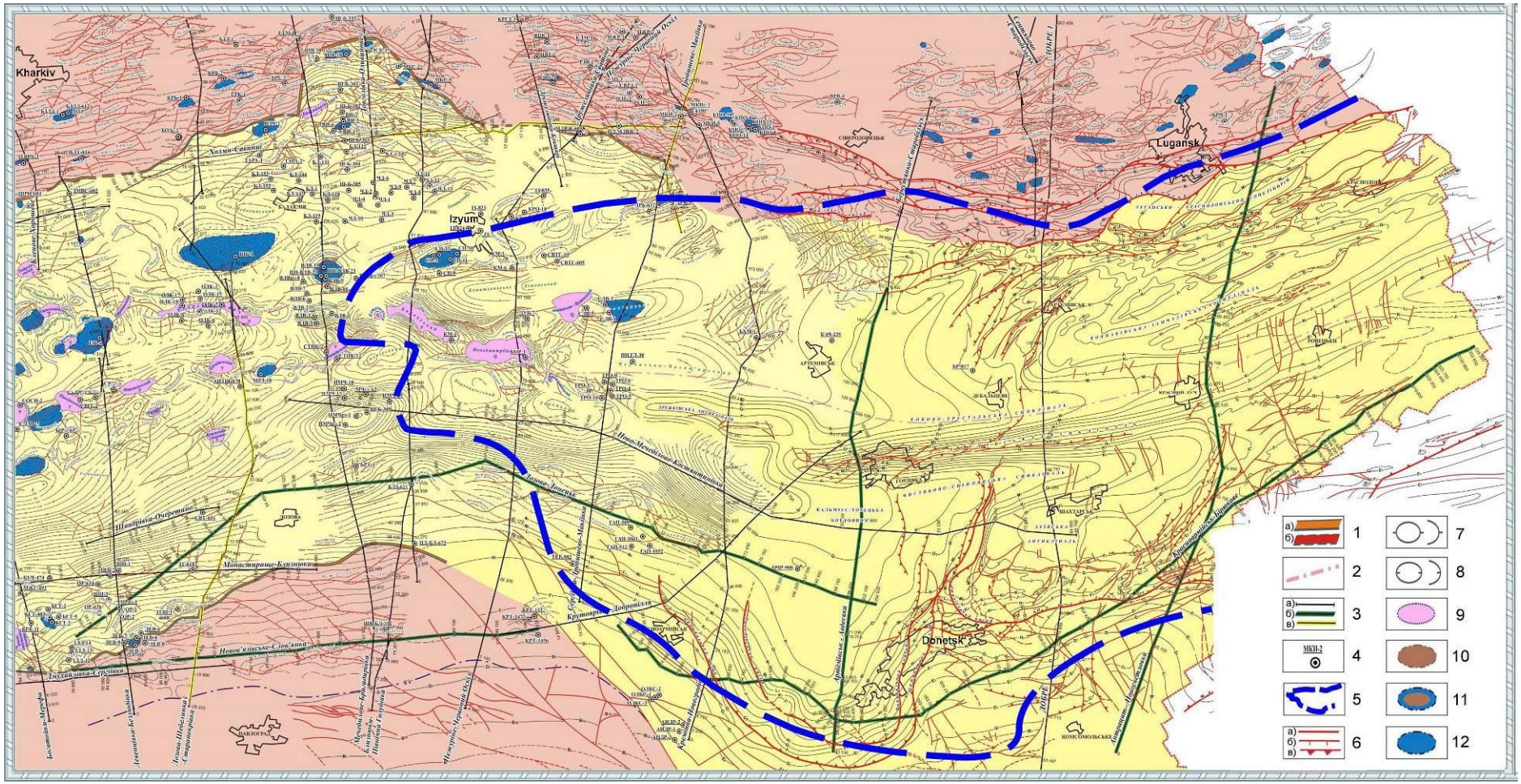

Fig. 3. Fragment of the tectonic map of Ukraine (the territory of the transition zone between the Dnieper-Donetsk Basin and the Donetsk Foldbelt), by [Kruglov & Gursky, 2007].

Symbols: 1 – edge regional faults: a – mapped; b – predicted; 2 – axis of the Western Donetsk Graben; 3 – regional seismic profiles: a – past years; b – new; 4 – wells; 5 – Western Donetsk Cover-Folded Region; 6 –faults: a–b: agreed and reverse discharges; 7 – antiforms; 8 – synforms; 9 – salt domes; 10–12 – fields: 10 – oil, 11– oil and gas condensate; 12 – gas condensate and gas

The Hercynian deformation lattice of the South-west vergence thrusts, which formed large linear anticlines and scaly thrust covers, was deformed at the main stage of inversion by the laramian and attic tilting-sliding lattice of the northwestern direction of movements with significant horizontal orientation. Due to this, a complex cross-sliding tectonic framework was formed within the transition zone between DDB and DF [Bartashchuk, Suyarko, 2020, Fig. 4, 5, 6]/

Significant horizontal displacements of geomass were caused by significant distortion in terms of primary linear routes of main thrusts of the Hercynian lattice in the conditions of limited geological space of WDG [Bartashchuk, Suyarko, 2021, Fig. 3]. The greatest changes were in the extension planes on the North-eastern and South-western flanks of the Western Donetsk Segment of the Tectonic Wedge and within the Kalmius-Toretska and Bakhmutska axial depressions. Moreover, there was the sharp change of axes of the North-Donetsky, Diamond, Drobyshivsky and Novy thrusts from the North-west to the West in the extension in the North-easter on the South-western flank, Samarn flank. However, a Kotlinsky, Mertsalivsky, Dileyevsky and Novoselivsky thrusts changed from the North-west to North-north-west and again to the West [Bartashchuk, Suyarko, 2021, Fig. 3].

Deformations of the thrusting frame caused the corresponding flexural bending of the axes of anticlinal near-fracture uplift-folds. They were formed in their raised wings, with a tendency to adapt to the extension of their planes. The sustained general North-west extension of the main thrusts of the axial zone (Sulino-Konstantinovsky and Axial) remained unchanged, but they were fragmented into separate, coulisse articulated branches.

The specific inversion tectonic style of the transition zone between DDB and DF was formed due to the formation of the Western Donetsk Laramian Cover-Folded Region. In contrast to the rift style of the Basin, which is characterized by regional Southeastern immersion of the platform sedimentary cover horizons, the inversion style of the Western Donetsk Region is characterized by reverse North-west immersion of the Hercynian, Laramian and Attic folded structural floors. This geological phenomenon is due to the increase in the thickness of the sedimentary cover formed by the allochthonous and neo-autochthonoustectonicplates. The depot center of maximum cover thicknesses (20–22 km) is situated in the axial zone of the WDG, within the central part of the Western Donetsk Segment of the Tectonic Wedge (Fig. 3). It corresponds to the most submerged part of the axial depression in the relief of the Precambrian foundation .

According to the kinematic model of tectonic inversion, the tectonic framework of the Western Donetsk Segment of the Tectonic Wedge consists of three dynamically conjugated linear zones of the strike-slip control [Bartashchuk, Suyarko, 2021, Fig. 3, 5]. The North -eastern flank of the thrusting system is formed by a curvilinear zone of coulisse articulated Laramian thrusts, including North-Donetsky, Diamond and Drobyshivsky. as well as Attic thrusts, such as Mariivsky, Khrestyshchensky, Dileyevsky and Lysychansky. The Central linear zone of the strike-slip control is formed by echeloned conjugated branches of the Axial, South-eastern branches of Samarsky and Northern branches of Diamond, the Laramian thrusts, as well as Sulino-Konstantinovsky, the Hercynian thrust. On the South-western flank, the thrusting system is formed by a curvilinear zone of coulisse articulated branches of Samarsky and Voikovsky, the Laramian thrusts, Novoselivsky, Kotlinsky and Mertsalivsky, the Attic thrusts.

Together these three lineament zones are assumed to have served as tectonic “rails”, along which the cover-folded Mesozoic-Cenozoic allochthon from the DF approached the weakly deployed Hercynian neo-autochthon in the South-eastern part of the DDB. Moreover, the Central linear zone is defined by the axis of longitudinal symmetry. It caused the processes of tectonic invasion of the sedimentary cover geomass from the axial zone of the Graben in opposite directions – towards SoutNorth [Bartashchuk, Suyarko, 2021, Fig. 5].

The tectonic inversion deformations of the rift-like structure were caused by the invasion of the “tectonic stamp” geoblock of the DF. Under its pressure, the plates of tectonic coverings and a linear uplift folds were formed They constitute forthe structural-tectonic framework of the Western Donetsk Segment of the Tectonic Wedging. Segment formation is most likely due to the kinematic mechanism of an “orocline of the transverse extension of the sliding type” [Bartashchuk, Suyarko, 2021, Fig 5].

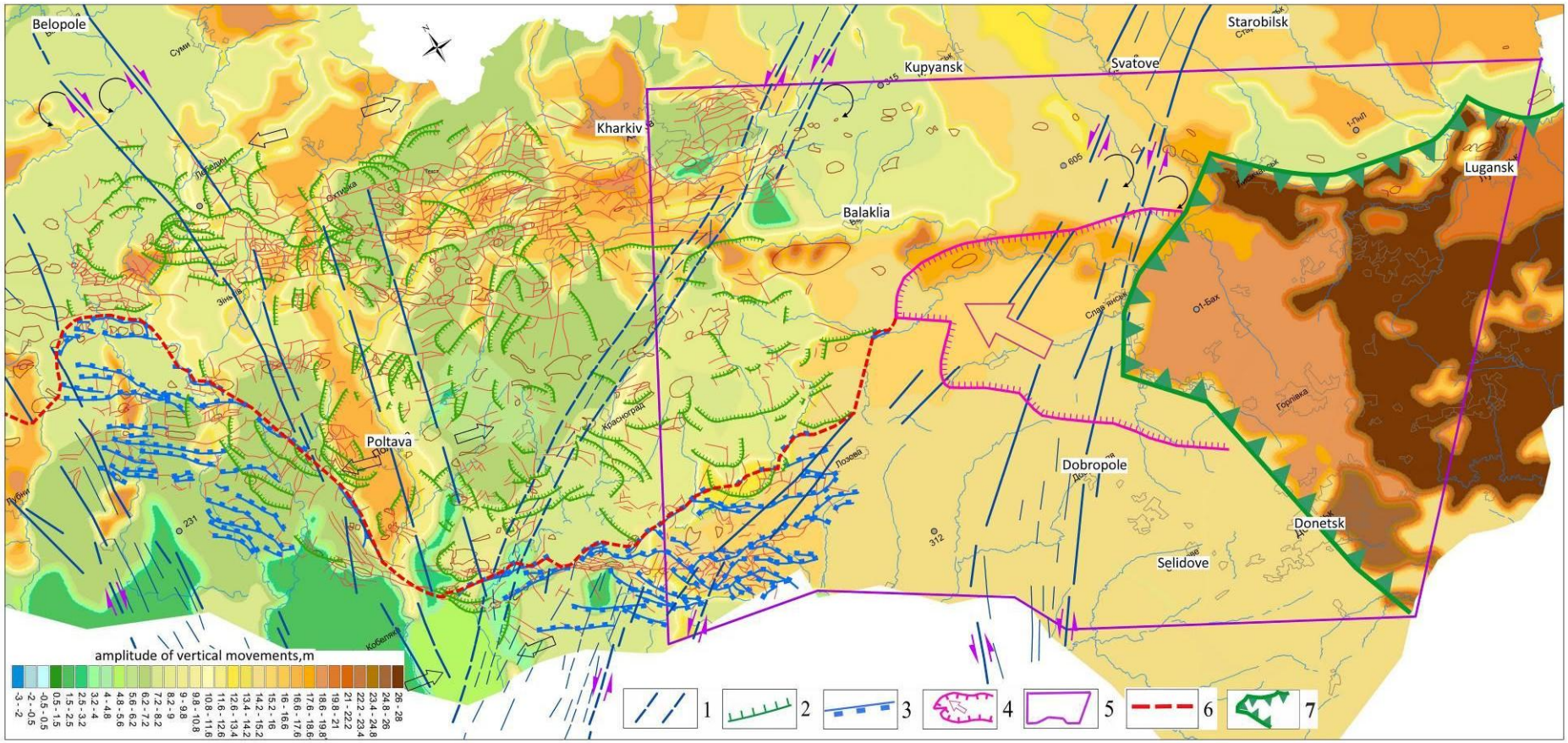

Fig. 4. Fragment of the map of vertical neotectonic (Holocene) movements in the Dnieper-Donets Basin by [Polivtsev, 2008].

Symbols: 1 – pre-rift deep faults, by [Krylov, 1987]; 2–3 – structural paragenesis of near-fault deformation: 2 – stretching; 3 – compression [Bartashchuk, 2019]; 4 – the Western Donetsk Tectonic Segment of Wedging; 5 – the research area; 6 – the boundary of longitudinal zones of collision deformations, by [Bartashchuk, 2019]; 7 – the front of invasion of the “tectonic stamp” megablock of the Donetsk Foldbelt

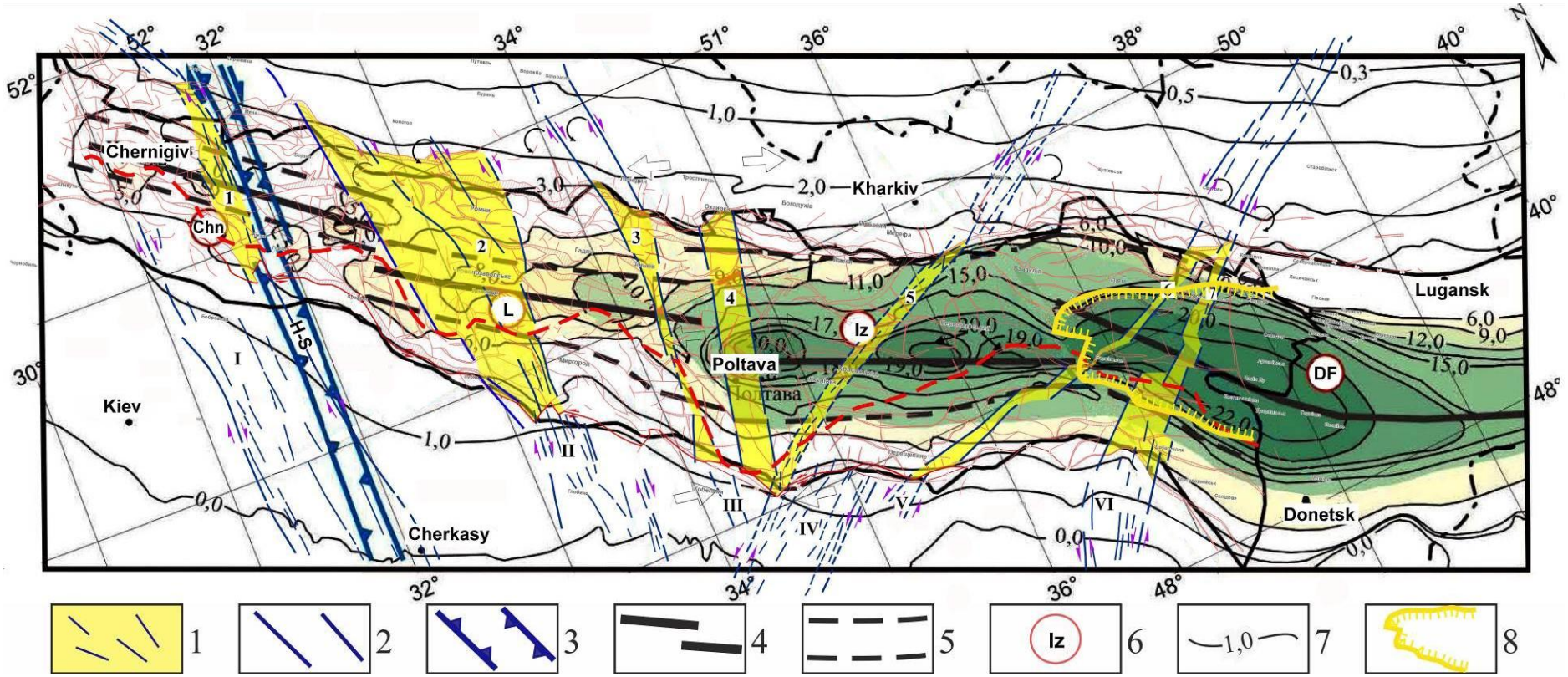

Fig. 5. Scheme of the Precambrian foundation relief of the Dnieper-Donets Basin, by [Starostenko et al., 2015].

Symbols: numbers 1 – intersegmental faults; 2 – pre-rift deep faults; 3 – H-S - tectonic seam Holmy-Smila; 4 – the axis of the rift; 5 – the boundaries of the paleorift; 6 – segments: Ch-Chernihiv, L-Lokhvytsky, Iz-Izyumsky, DF – the Donetsk Foldbelt; 6 – the boundaries of longitudinal geodynamic zones: 7 – isogypsum of the foundation surface; 8 – Western Donetsk Segment of Wedging

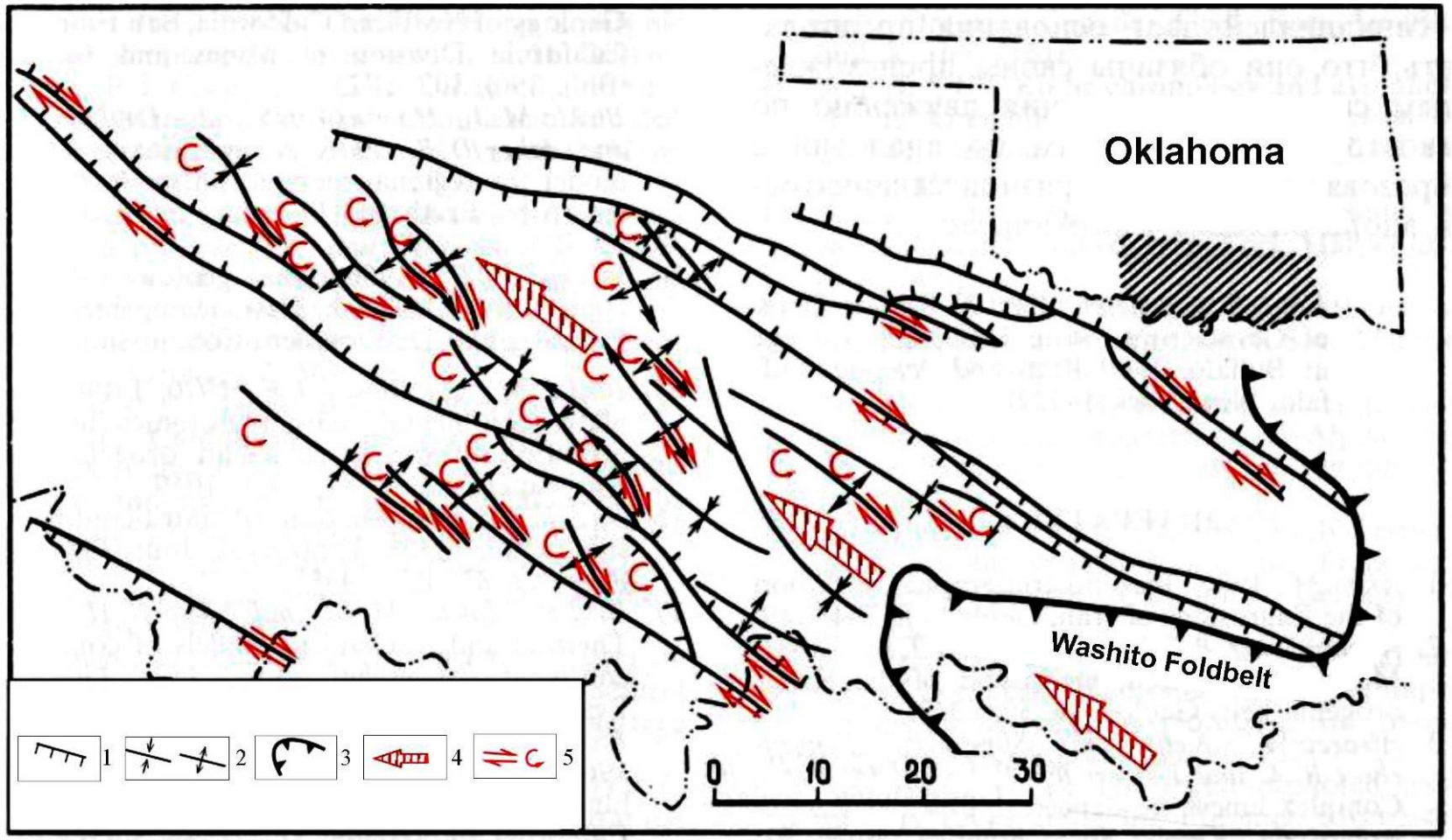

Fig. 6. Tectonic scheme of the South Oklahoma Paleorift (Arbuckle, Oklahoma, USA), by [Wickham, 1978].

Symbols: 1 – downthrow-slip-strike faults; 2 – axes of anticlines and synclines; 3 – the front of the invasion of the Washito Foldbelt. The directions of horizontal tectonic movements: 4 – displacements of geomass; 5 – strike-slip displacements with rotations of the geoblocks

Tectonic orocline of the transverse extension borders the front of the wedge-shaped geoblock-stamp of the DF. It has an abnormally high degree of compression, orogenic rising and fold formation in the invasion front (Fig. 2). The geodynamic mode of longitudinal tension was formed in the convex part of the invasion orocline by transverse bending. Unlike it, longitudinal compression was formed within the WDG in the concave part , because of the lack of geological space in the area of immediate vicinity of the tectonic stamp. That is why, the orocline bends towards the tectonic stamp - to the northwest, to the DDB.

The geodynamic strip of geomass injection was diagnosed in the front of tectonic invasion, where the deformations of the primary sliding frame and folded extrusion zones were formed.They were, represented by anticlinal uplift folds and folded plates-covers. The North-eastern flank of the front consists of Torsko-Drobyshivska, North-Donetska, Matrosko-Toshkivska linear folded zones [Bartashchuk, Suyarko, 2021, Fig. 5]. The remaining large anticline and syncline zones were located in the Central linear zone of strike-slip control. The Komyshuvaska, Novotroitska, Druzhkivsko-Kostiantynivska and t he Main largest linear anticline uplift-folding zones formed in the zones of axial thrusts belonging to the Luhansk-Komyshuvaska Tectonic Area.

There is scaly compression fan formed in the foreland of the thrusting of the Western-Donetsk Tectonic Segment. It is situated in the connection zone of the central and southern branches of the salt-dome shafts of the axial part of Basin. The compression fan consists of the tectonic node of dynamically conjugate trunk thrusts and strike-slip faults of three folded structural floors [Bartashchuk, Suyarko, 2021, Fig. 5].

Distribution analysis of the positive amplitude anomalies on the map of vertical neotectonic (Holocene) movements [Polivtsev, 2008] argues in favor of inversion deformations of the rift-like structure by the kinematic mechanism of intrusion of the transverse tectonic stamp of the DF (Fig. 4). There is the field of positive anomalies of vertical neotectonic movements traced in the South-east of the DDB, from the meridian Lozova – Balakliya – Kupyansk. The wedge-shaped region of maximum amplitude values (21–28 m) can be traced in the Western slopes of the DF, which is equated with the tectonic geoblock stamp. The area of relatively high amplitude values (14.2–21 m) adjoins to this area from the Northwest. This area is formed under the pressure of the stamp of the DF. It is undergoing orogenic uplift and compared with the body of the Western Donetsk Segment of the Tectonic Invasion of sedimentary geomass, located in the territory of the WDG.

The different surfaces of the earth's crust have an expression in the relief features of the Precambrian crystalline basement (Fig. 5). The boundaries of the transverse segments of the consolidated crust control the longitudinal gradual immersion of the foundation surface from 2 km in the North-west to 20–22 km in the South-east, in the axial zone of WDG [Starostenko et al., 2015]. The area of maximum thickness of the sedimentary cover corresponds to the axial depression in the foundation surface, which is located within the Western Donetsk Segment of Tectonic Invasion.

The allochthonous formations constitute a significant part of the sedimentary section uncompensated by syneclise deflection. This conclusion is made on the basis of identification of the kinematic mechanism of increasing the total thickness of the sedimentary section due to the formation of new plates-covers because of geological space reduction (Fig. 2).

A comparative analysis of the tectonic structure of DDB and the South Oklahoma Aulacogen (Arbakle Province, Oklahoma, USA) shows their obvious structural isomorphism (Fig. 6). This may indicate both the common features of tectonic and sedimentary evolution of these paleorift geostructures, and possibly argue in favor of a similar natural mechanism of tectonic inversion. There was the effusive and intrusive activity of the bimodal type of acidic and basic composition in the Aulacogen Washito at the Paleozoic rift formation stage [Wickham, 1978]. The initial immersion was rapid, so the lower part of the rift section consisted of continental coarse-grained strata.The stage of platform immersion is characterized by slower sedimentation, so the upper syneclise part of the sedimentary basin section of the paleorift consists of layers of the shelf carbonates and quartzites.

The initial stage of tectonic inversion of the South Oklahoma Paleorift, as well as in the DDB, is characterized by deformation folding and the formation of large linear anti- and synforms in a geodynamic environment of collision compression. At the next stage, there were secondary deformations of the linear folds by uplift and thrust strike-slip faults due to significant longitudinal horizontal displacements of sedimentary geomass in the limited internal geological space of the Aulacogen. Powerful sedimentary strata of allochthonous approached from the East of the neighboring Foldbelt of the same name, which underwent orogenic uplift. Moreover, the maximum thicknesses of allochthonous formations were accumulated in the areas of the sedimentary basin located in the immediate vicinity of the Foldbelt.

According to this structural data, the formation of the system of tectonic thrusting of sedimentary geomass in the Avlacogenic basin occurred by a natural kinematic mechanism similar to DDB in It

provided two accurately concave folded zones formed in the Washito Basin, complicating the initially linear pattern of the early platform folding, under the pressure of the Wedge-shaped tectonic stamp of the adjacent Foldbelt (Fig. 6). They are adjacent to the main thrusts which control the body of the tectonic segment of the invasion of sedimentary geomass from the Foldbelt.

Thus, the similarity of structural patterns of deformation structures can testify in favor of common geodynamic conditions of tectonic inversion of both analyzed paleorift geostructures and the correctness of detection the Western-Donetsk Cover-Folded Tectonic Region and the Segment of tectonic invasion in the transition zone between DDB and DF.

Scientific novelty and practical significance

Based on the results of regional geotectonic studies, an original structural-kinematic model of tectonic inversion of DDB was developed. It provides for the destruction of the rift-like structure by the collisional structural deformations in the South-east. The collision pressure of the transverse DF tectonic stamp defined the main factor of the deformations. The cover-folded system of tectonic thrust was first identified within the WDG as the West Donetsk Tectonic Region which was formed under its influence. The main structural element of the region is the West-Donetsk segment of Tectonic Wedging of sedimentary geomass which was formed by the kinematic mechanism of tectonic orocline of transverse extension of sliding type. The obtained data on the system organization of inversion rearrangements of the rift-like structure are the basis of the original geodynamic model of DDB tectonic inversion . It is expedient to use the model to improve the schemes of regional tectonic and oil and gas geological zoning of the territory.

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ГЕОДИНАМІКА ФОРМУВАННЯ ПЕРЕХІДНОЇ ЗОНИ МІЖ ДНІПРОВСЬКО-ДОНЕЦЬКОЮ ЗАПАДИНОЮ І ДОНЕЦЬКОЮ СКЛАДЧАСТОЮ СПОРУДОЮ. ТЕКТОНІЧНА ІНВЕРСІЯ РИФТОГЕННОЇ СТРУКТУРИ

Досліджено системну організацію інверсійних деформацій Дніпровсько-Донецької западини та Західно-Донецького грабена. На підставі структурно-кінематичного аналізу деформаційних структур, ідентифікованих у складчастих поверхах осадового чохла, з урахуванням попередніх моделей інверсійного структуроформування, зроблено спробу створити оригінальну модель тектонічної інверсії рифтогенної структури. Тектонічна інверсія Дніпровсько-Донецької западини та Донбасу розпочалася в пізньогерцинську епоху в геодинамічному режимі загальноплитної колізії. Тектонофізичний аналіз інверсійних деформацій свідчить, що складчастість у западині та лінійні анти- та синформи Донбасу формувалися під впливом природного механізму поздовжнього вигину внаслідок колізійного жолоблення горизонтів у геодинамічному режимі транспресії. В пізньому мезозої – кайнозої інверсія продовжувалася у полі правобічних горизонтально-зсувних деформацій із перемінною стискальною складовою. Цим режимом зумовлено формування складчастих тектонічних покривів та їх насування з

боку Донбасу на герцинські неоавтохтонні утворення Західно-Донецького грабена та слабодислокований синеклізний автохтон південного сходу западини. Через тиск тектонічного штампа складчастого Донбасу сформувався Західно-Донецький тектонічний сегмент, який ідентифіковано структурним ороклином поперечного висування осадових геомас. У фронті та осьовій зоні тектонічного ороклину утворилися геодинамічні смуги нагнітання та витискання геомас, де формувалися великі лінійні складчасті зони. У форланді ороклину вторгнення, на закінченнях магістральних насувів, що слугували “тектонічними рейками” вторгнення геомас алохтону в рифтогенну структуру, в западині сформувалося передове лускате віяло стискання. У хінтерланді – тилу ороклину, в Західному Донбасі на герцинському неоавтохтоні залягає коріння складчастих покривів насування, яким сформовані тектонічні сутури. На підставі вивчення системної організації колізійних деформацій Західно-Донецького грабену принципово розроблено модель структурно-кінематичної еволюції земної кори Дніпровсько-Донецької западини на колізійному етапі. Згідно із нею, тектонічна інверсія рифтогенної структури на території Західно-Донецького грабену зумовлена вторгненням під тиском тектонічного штампа складчастого Донбасу тектонічного сегмента вклинювання дислокованих осадових геомас із формуванням Західно-Донецької покривно-складчастої тектонічної області. Дані щодо системної організації інверсійних перебудов рифтогенної структури покладено в основу оригінальної геодинамічної моделі тектонічної інверсії Дніпровсько-Донецької западини, яка може бути використана для вдосконалення схем регіонального тектонічного та нафтогазо-геологічного районування.

Ключові слова: тектонічна інверсія; зони колізійного стиснення, структурні деформації, ороклин поперечного висування, сегмент тектонічного вклинювання;; Західно-Донецька покривно-складчаста область.

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