GEOLOGIJA. 2007. No. 60. P. 33–38

Tectonics • Tektonika • Тектоника

Klaipėda tectonic sigmoid

Radim Garetsky,

German Karatayev

Garetsky R., Karatayev G. Klaipėda tectonic sigmoid. *Geologija*. Vilnius. 2007. No. 60. P. 33–38. ISSN 1392-110X

The Polotsk–Kurzeme fault belt extending for 600 km is bounded by sublatitudinal faults of Šilutė–Polotsk in the south and Liepaja–Lokno in the north. It is easily distinguished in the magnetic and gravity fields, as well as from the activation of several faults at various tectonic stages, including the recent stage.

The Gotland tectonic belt running from the southeast to the northwest for a distance of 500 km is distinguished in the Baltic Sea. In the region of Klaipėda geothermal anomaly both belts join forming a tectonic sigmoid (a horizontal flexure that looks like a knee-shaped bending in the plan-view), which the authors named the Klaipėda sigmoid. This bending is well identified in the turn of thermal anomalies and potential geophysical fields.

The Klaipėda sigmoid shows a complicated structure and is broken by numerous faults of various (both orthogonal and diagonal) orientations.

Key words: fault belt, tectonic belt, tectonic sigmoid, East European Platform

Received 20 June 2007, accepted 15 September 2007

Radim Garetsky, German Karatayev. Institute of Geochemistry and Geophysics, National Academy of Sciences of Belarus, Kuprevich 7, 220141 Minsk, Belarus. E-mail: german@igig.org.by

INTRODUCTION

The Polotsk–Kurzeme fault belt has been previously distinguished as an important tectonic feature of the East-European Craton (Гарецкий и др., 2002; 2004). The major oil fields of the Baltic syneclise are confined to this belt in the west of Lithuania; the largest West-Lithuanian thermal anomaly is situated within this belt and is used for the Klaipėda geothermal power plant. The belt is considered to be a promising structure for the occurrence of volcanic (probably diamondiferous) pipes, etc.

The Polotsk–Kurzeme fault belt is bounded by sublatitudinal faults: Šilutė–Polotsk in the south and Liepaja – Lokno in the north (Fig. 1). The first one cuts the Caledonian structural complex and has an amplitude from 10 to 50 m in the basement surface (Тектоника Прибалтики, 1979). In the east, this fault is associated with a deep-seated zone showing an amplitude of 3 km in the Moho discontinuity and is identified in the Braslav–Pleshchenitsi profile from seismological data obtained by the method of remote earthquake exchange wave (Гирин, 1991). In the west, the Liepaja–Lokno fault zone is parallel to the Liepaja–Riga fault zone. It has been recorded on the Sovetsk–Kohtla–Jarve deep seismic sounding (DSS) profile (Анкундинов и др., 1991). Northward of the latter zone, the Moho discontinuity occurs at a depth of about 55 km and southward increases to 65 km. The Liepaja–Riga fault zone is thoroughly studied in the sedimentary cover. It is composed of a set of echelon and parallel faults; reverse faults sometimes extend for more than 300 km. The amplitude ranges from 100 to 150 km, reaching 600 to 650 km. The eastern continuation of the Liepaja–Lokno marginal fault running near the town of Lokno was identified from the gravity and magnetic field pattern.

The tectonic setting of the Polotsk–Kurzeme fault belt is shown in Fig. 2. It is seen that the Polotsk–Kurzeme fault belt divides the Volyn–Central Russian transplatform palaeorift system extending through the whole East-European Craton from the southwest to the northeast for more than 2,000 km into two parts: southwestern Volyn–Orsha palaeorift and northeastern Central Russian aulacogen. The first one has a rather simple structure – there are no marginal faults, whereas the second one is rather complex, involving several branches that have clear fault restrictions with steps, horsts and troughs distinguished among them.

The Nelidov uplift in the east divides the Polotsk–Kurzeme fault belt into two parts. The northern branch extends to the Tver graben, while the southern one – to the Gzhatsk graben. There is a complex junction (node) of the Riphean structures: Volyn–Orsha aulacogen in the southwest, Krestsov (Valdai) graben in the northeast, Prechistenka, Gzhatsk and Tver grabens in the east and Moscow graben and Pachelma aulacogen further to the east. It is named the Gorodok–Sloboda node (Гарецкий, 2005) or in brief the Sloboda node.

In the west, the Polotsk–Kurzeme fault belt extends along the axial part of the Baltic hemisyneclyse (monoclise). It probably represented the extensional structure over which the Baltic hemisyneclise had formed at the Caledonian stage. The belt is clearly distinguished as a set of numerous faults abundant in the

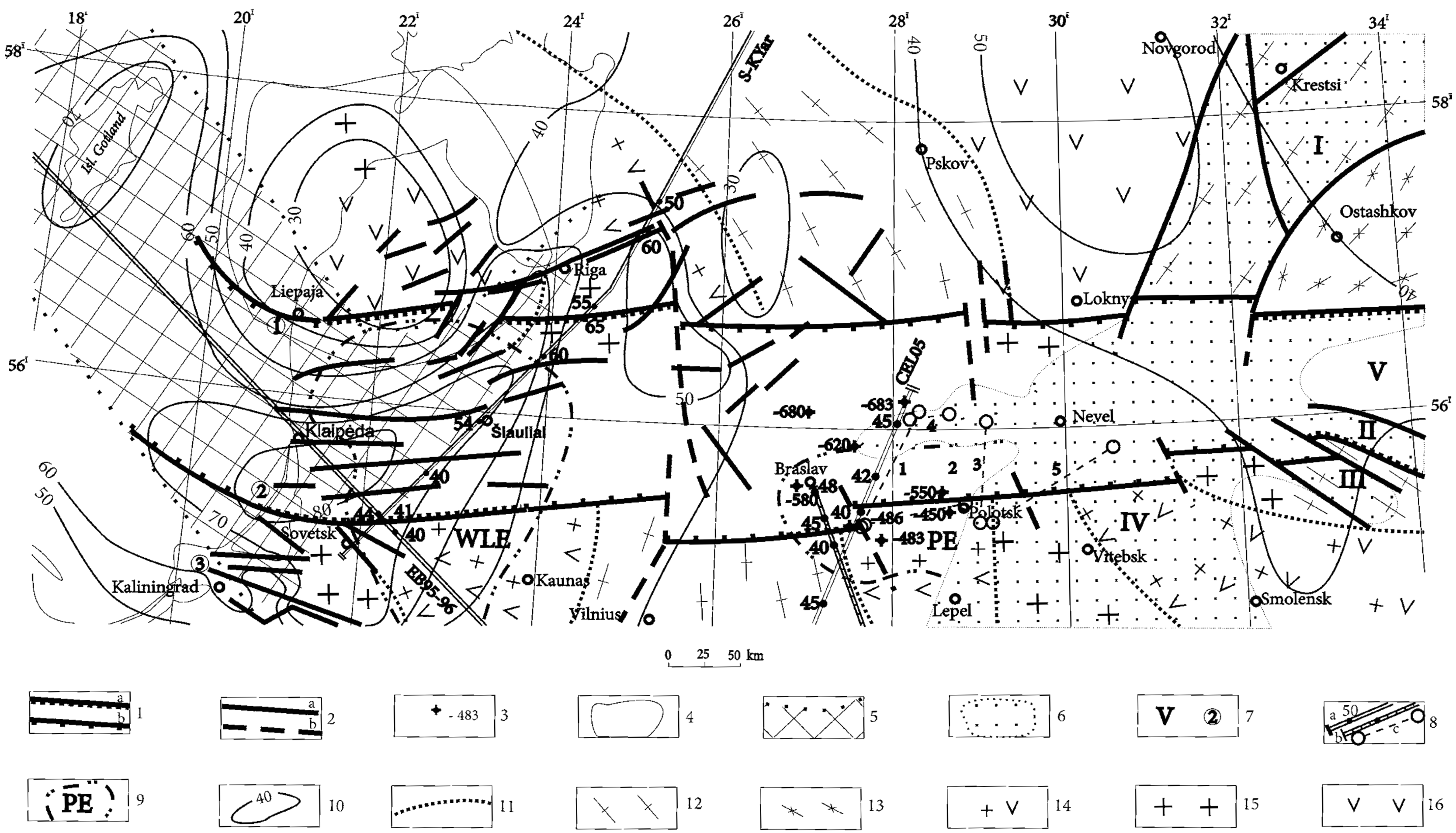

Fig. 1. Tectonic sketch map of the Polotsk–Kurzeme fault belt. *1* – marginal deep faults determined from: *a)* geological and seismic data, *b)* gravimetric and magnetometric data; *2* – faults determined from *a)* geological and seismic data, *b)* gravimetric and magnetometric data; *3* – boreholes penetrating into the basement, absolute heights of the basement, m; *4* – Riga pluton of rapakivi-granites; *5* – Gotland tectonic belt (according to Ostrovsky, 1998); *6* – areas of widespread Riphean deposits, *7* – Roman numerals – grabens: *I* – Krestov (Valdai), *II* – Gzhatsk, *III* – Prechistin; *IV* – Orsha palaeodepression; *V* – Nelidov uplift; encircled numerals – fault zone: *1* – Liepaja–Riga, *2* – Nemunas, *3* – Pregol; *8* – geophysical profiles: *a* – Sovetsk–Kohtla–Jarve, EUROBRIDGE and CELEBRATION DSS profiles, *b* – Braslav–Pleshchenitsi CDPS profile, points on DSS and CDPS profiles – Earth's crust thickness values, km, *c* – gravimetric and magnetometric (*1* – Sharkovshchina–Verhnedvinsk–Kostrovo, *2* – Polotsk–Yukhovichi, *3* – Obol–Dretun–Zaborje, *4* – Osveja–Krasny Bor, *5* – Nikolayevo–Polovo); *9* – contours and names of geoelectrical anomalies due to high conductivity of crustal material: WLE – West Lithuanian, PE – Polotsk; *10* – heat flow density isolines, mWt / m^2; *11* – boundaries of anomalous magnetic field types; *12–16* – types of anomalous magnetic fields; *12* – alternation of distinct positive and negative elongated anomalies, *13* – positive and negative elongated anomalies of a complex pattern, *14* – mixed positive and negative anomalies of various shapes, *15* – large-scale positive anomalies, *16* – large-scale negative anomalous fields with local positive anomalies

1 pav. Polocko–Kuržemės lūžių juostos tektoninė schema

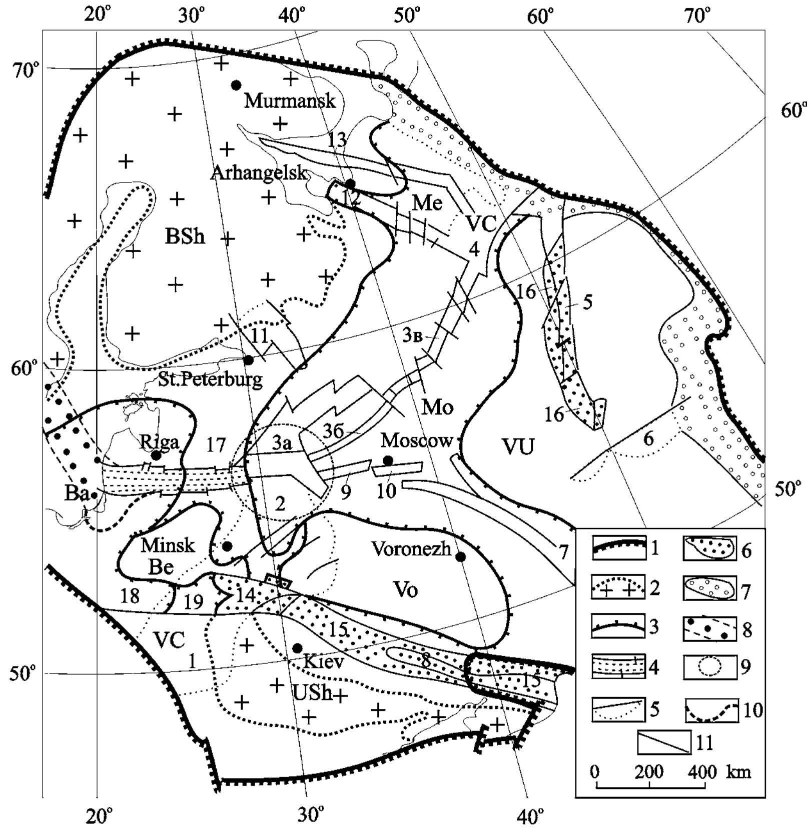

Fig. 2. Tectonic setting of the Polotsk–Kurzeme fault belt in the system of the East European Platform: *1* – platform boundaries; *2* – shields (BSh – Baltic, USh – Ukrainian); *3* – boundaries of anteclises: (Be – Belarussian, Vo – Voronezh, VU – Volga–Urals); syneclises (Ba – Baltic, Mo – Moscow, Me – Mezen); *4* – Polotsk–Kurzem fault belt; system of palaeorifts according to M. A. Nahorny with some modifications (Гарецкий и др., 2004); *5* – early palaeorifts (BC – Volyn–Central Russian trough system: *1* – Volyn and *2* – Orsha palaeotroughs; Central Russian aulacogen: *3a* – Krestsov (Valdai), *3b* – Tver, *3v* – Sukhon branches; *4* – Yaren depression. Aulacogens: *5* – Kazhim (Viatka), *6* – Sernovodsk–Abdulin, *7* – Pachelma, *8* – Dnieper–Donets. Grabens: *9* – Gzhatsk, *10* – Moscow, *11* – Ladoga, *12* – Dvina, *13* – Leshukon); *6* – late palaeorifts (*14* – Pripyat, *15* – Dnieper–Donets, *16* – Viatka troughs); *7* – zones of pericratonal subsidence developed simultaneously with the early palaeorifts; *8* – Gotland belt; *9* – Late Proterozoic Sloboda tectogeodynamic node limits; *10* – conventional southern limit of the Klaipeda tectonic sigmoid; *11* – faults. *17–19* – tectonic features: *17* – Latvian Suddle, *18* – Podlaska–Brest Depression, *19* – Polessian Saddle

2 pav. Polocko–Kuržemės lūžių juostos tektoninė padėtis Rytų Europos platformos sistemoje

Caledonian complex and less numerous in the Hercynian complex. Some of them penetrate into the Meso–Cenozoic deposits (Тектоника Прибалтики, 1979).

The Polotsk–Kurzeme fault zone is traced as far as the Baltic Sea coast and runs to the westeast, then it terminates abruptly. However, A. A. Ostrovsky (Ostrovsky, 1998) identified from the DSS data a tectonic belt running from the northwest to the southeast from the eastern coast of Sweden across the Baltic Sea and crossing the whole Gotland island. The authors named it the Gotland belt (Гарецкий и др., 2004). The Gotland belt butts the western termination of the Polotsk–Kurzeme fault belt. Their junction is not yet entirely clear, but geophysical data available testify an abrupt bending of both belts at their junction. D. I. Mushketov (Мушкетов, 1935) called such elbow-shaped bend in the bedding trend (horizontal flexure) a sigmoid. Therefore, this bend of the Polotsk–Kurzeme tectonic belt and its transition into the Gotland belt may be named the Klaipėda tectonic sigmoid. It is confined to the West-Lituanian (Klaipėda) geothermal anomaly.

From the Sloboda tectogeodynamic node to the Klaipėda tectonic sigmoid the Polotsk–Kurzeme fault belt extends for more than 600 km with a width of 120–160 km.

WESTERN TERMINATION OF THE POLOTSK–KURZEME FAULT BELT

The western termination of the Polotsk–Kurzeme fault belt most likely developed in the Late Proterozoic. During the Phanerozoic, it was repeatedly activated, and this activation is even evident at the neotectonic stage. Therefore, it is very important to study its evolution and particularly the recent activation in terms of ecological safety, especially considering the fact that the Ignalina NPP is located within this belt (Šliaupa et al., 2006).

The faults situated in the western part of the belt are studied most of all. However, these are still not fully understood (Тектоника Прибалтики, 1979; Lietuvos …., 2003; Šliaupa, 2006, etc.). There are the regional faults (extending for several tens to several hundreds of kilometers, showing basement top amplitudes of 200–500 m and demonstrating large and medium tectonic features – troughs, grabens, uplifts and steps) and the local ones (up to a few tens of kilometers in length). The faults are mostly distinguished. Most of them (approximately 60%) penetrate into the Late Baikalian and Caledonian structural complexes, many of them (up to 30%) are represented in the Hercynian complex as flexures or ruptures of a smaller amplitude, and a few of them have developed in the Cimmerian–Alpine complex. These faults are often active at the neotectonic stage as well, while some of them are evident in the recent relief. The largest faults form the rupture–flexure zones, such as Liepaja–Riga, Suvalki–Dzūkai, Šilutė, Telšiai, Pregol and other fault zones.

The faults were mainly studied by the seismic exploration methods and in some sites – by drilling. Some of the faults (Akmenė, Mažeikiai, Telšiai, etc.) that confine to the western termination of the Polotsk–Kurzeme zone have been recently studied in detail (Šliaupa, 2006). These faults are well traced from the pattern of local (residual) gravity anomalies. The faults were probably initiated as early as the Early Precambrian, then finally developed in the Late Silurian–Early Devonian under the influence of the orogenic processes in the Scandinavian Caledonides.

During the Late Variscan stage an inversion took place. The faults were activated during the Variscan and Cimmerian–Alpine stages under various tectonic regimes.

The Lithuanian geologists have compiled a map of the potential energy of the Earth's crust surface, which demonstrates very distinctly sublatitudinal tectonic features of the Polotsk–Kurzeme belt (Korabliova, Šliaupa, 2006). The neotectonicly active linear zones of the sublatitudinal trend of Polotsk, Zarasai, Šilutė, Drissa, Telšiai, Akmenė and Mažeikiai were examined within the Polotsk–Kurzeme fault belt (Sliaupa, 2006). The main features of the crystalline basement and the linear tectonic zones are well seen on the maps of the gravity and magnetic fields (Popov, Šliaupa, 1997). Two types of the structural elements were identified at different crustal levels: presence or absence of geological bodies. The latter could be associated with geological contacts or faults. Magnetic models have been constructed along the profiles that cut almost all major fault zones of Lithuania and provide a clue to understand their geometry. Crustal structural features were compared to the pattern of neotectonicaly active linear zones and Quaternary base terraces. The faults terminate abruptly at a depth of approximately 8 km.

GOTLAND TECTONIC BELT

In the eighties–nineties of the past century, deep seismic sounding was performed along several profiles in the Baltic Sea, among which FENNOLORA, BABEL and BALTIC SEA are most important. The interpretation of the DSS profiles suggests that at a depth of 45 km there is a local depression in the Moho discontinuity seen as a 110 km wide zone bounded by up to 2–3 km offset faults and striking in the northeast direction (Ostrovsky et al., 1994).

Furthermore, beneath this depression A. A. Ostrovsky distinguished a dome-like Moho uplift at a depth of 60 km (Островский, 1995; Ostrovsky, 1998). Such an inverse pattern of the deep structure of the Earth's crust and the upper mantle, as well as the seismic wave velocity (7.8 km/s) being rather low for the upper mantle and usually associated with the deconsolidation and depth substance uplift, seismostratigraphic properties peculiar to the fault events, the correspondence of the inversion structure of the crust bottom and the upper mantle to the existed ideas of the continental rifting zone formation (Allen Ph., Allen J., 1990) – all of these elements suggest, in Ostrovsky's opinion, an old rifting zone which occurs beneath the present Baltic area centre. It should be noted that the inversion zone distinguished by A. A. Ostrovsky coincides in strike with such extension zones as the Teisseyre–Tornquist and Ladoga–Bothnian ones.

The tectonic belt distinguished in the central part of the Baltic Sea extends for about 500 km from the northwest to the southeast and runs from the eastern coast of South Sweden across the northern part of the Eland island and crosses the Gotland Island (therefore, it may be named as Gotland). It extends to the eastern coast of the sea to the south of the Riga rapakivi pluton and crosses the western part of the Polotsk–Kurzeme belt. The highest heat flow values (up to 60–80 mWt/m^2) are confined to the Gotland belt. The origin of this belt has not yet been completely ascertained. It is most likely an Early Proterozoic rift or a remnant of the old continental borderland.

KLAIPĖDA TECTONIC SIGMOID

An analysis of the gravity and magnetic fields in the junction zone of the Gotland and Polotsk–Kurzeme belts (Fig. 1) demonstrates that linear magnetic anomalies observed at the western termination of the Polotsk–Kurzeme fault belt change their strike from sublatitudinal (within the continent) to northwestern one in the Baltic Sea, thus turning towards the Gotland island. The gravity field pattern is complicated. There is a large out-of-round negative anomaly of northeastern strike, with some local northwest oriented anomalies observed in its background.

The Gotland belt is possibly a western continuation of the Polotsk–Kurzeme fault belt that takes a sharp northwest turn on the Baltic Sea coast within the Klaipėda thermal anomaly area. Hence, both these belts represent a common large tectonic feature of the Craton, which shows an abrupt bending in the region of West-Lithuanian (Klaipėda) thermal anomaly. This feature could be identified as the Klaipėda tectonic sigmoid (Fig. 3).

Faults of various trends, including sublatitudinal and northwest oriented ruptures, create a complex pattern at the intersection (bending) site. The area to the south of the Polotsk–Kurzeme belt boundary should be probably included into the sigmoid limits, as the territory is considerably broken there by differently oriented faults at the knee-shaped bending site. This area of the sigmoid covers the territory to the south of Kaliningrad as far as the Northern Poland.

The Pregole zone extending in parallel with the Polotsk–Kurzeme fault belt is the most distinct fault zone, and it is not unlikely that it also should be considered as a part of this belt. The Pregole fault zone is flanked by the Pregole graben on the south and by the Kaliningrad uplift in the north.

Farther to the south, the sublatitudinal faults compose the Aistmarė graben. Along with the aforementioned sublatitudinal faults there are several faults of other orientation, among which the northwest oriented structures are predominant. They are particularly well-defined farther to the southwest and continue in the Gotland tectonic belt.

The Polotsk–Kurzeme and Gotland belts are considered as a single tectonic feature with a length of more than 1,100 km.

CORRELATION OF THE POLOTSK–KURZEME FAULT BELT AND STAGES OF THE BALTIC HEMISYNECLISE TECTONIC EVOLUTION

The western termination of the Polotsk–Kurzeme fault belt most likely originated in the Late Proterozoic. However, the oldest platform deposits of the Vendian age had accumulated just to the east of this termination. The isopachs of Vendian deposits and of the Baltic series of the Lower Cambrian (Upper Baikalian structural complex) diagonally cut the fault belt strike, and this structural formation complex is up to 300 m thick farther to the east and even thicker just within the axial part of the Polotsk structural bay, which gradually becomes sublatitudinal coincident in strike with the Polotsk–Kurzeme fault belt.

The southwestern passive borderland of the East-European Platform with the Baltic Dniester pericratonal zone of subsidences, as well as the Baltic hemisyneclise confining to this zone with the western termination of the Polotsk–Kurzeme fault

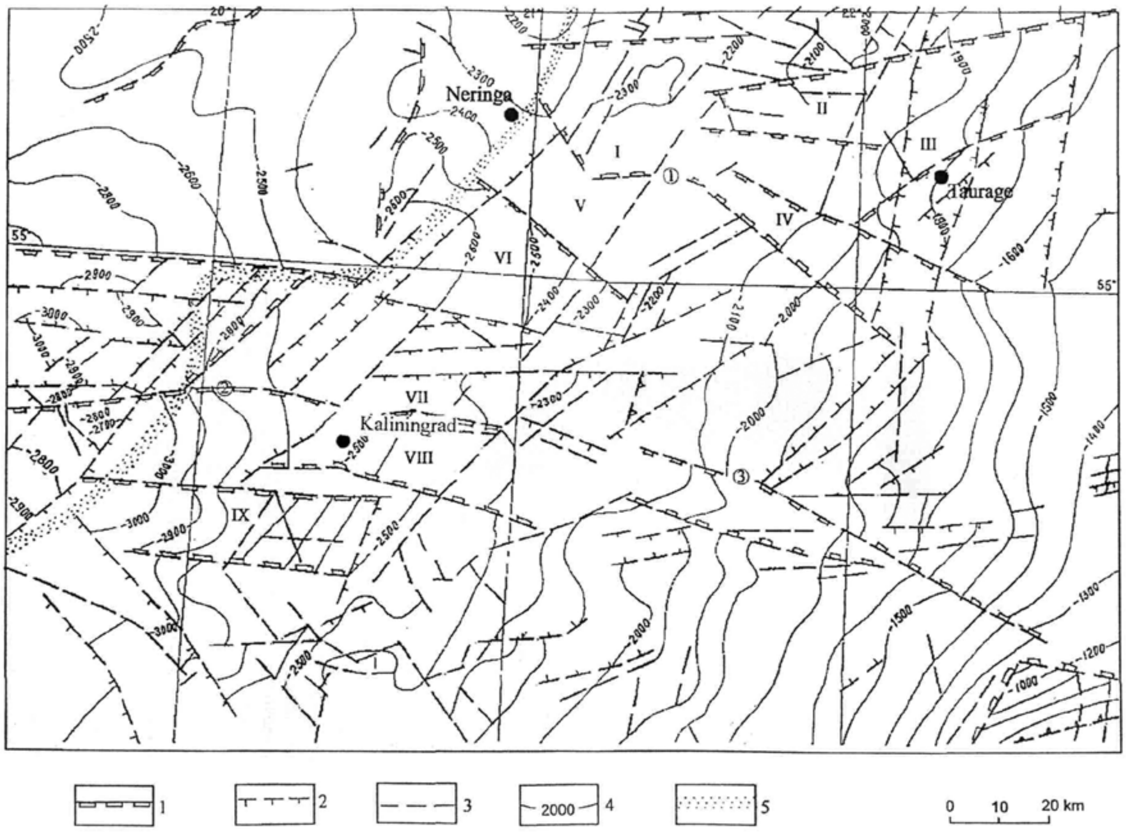

Fig. 3. Sketch of the Klaipėda tectonic sigmoid southern part structure (according to Tectonic Map of Lithuania – Lietuvos …, 2003): faults: *1* – regional; *2* – subregional; *3* – local; *4* – stratoisohypses of the basement surface; *5* – Baltic Sea coastal area: *I* – Kursh trough, *II* – Šilutė trough, *III* – Tauragė uplift, *IV* – Nemunas graben, *V* – Bolshakov uplift, *VI* – Sambijsk trough, *VII* – Kaliningrad uplift, *VIII* – Pregol graben, *IX* – Aistmare graben. Fault zones (encircled numerals): *1* – Nemunas, *2* – Pregol, *3* – Suvalki–Dzūkija

3 pav. Klaipėdos tektoninio sigmoido pietinės dalies schema (pagal Lietuvos tektoninį žemėlapį, Lietuvos …, 2003)

belt started their development in the latter half of the Upper Baikalian stage.

The Caledonian is the major stage of the formation of the Baltic–Dniester zone of pericratonal subsidences and the Baltic hemisyneclise. The most complete sections of the Caledonian structural complex were accumulated there.

A vertical lithological pattern of the zone of pericratonal subsidences suggests its gradual evolution from transgressive terrigenous sediments (Superbaltic Lower Cambrian, Middle and Upper Cambrian, Tremodocian stage of the Ordovician) to inundation carbonate, carbonate–clayey and clayey (Ordovician, Silurian) and regressive terrigenous carbonate and carbonate deposits (Ludlow–Lower Devonian). The lower rank transgressions and regressions distinguished in addition to the above sequence did not influence the general trend of the zone evolution. The terrigenous formations are mainly represented by sandy-clayey deposits with bituminous limestones and alum shales occurring in places. The maximum transgression was in the Middle Cambrian. Three main structural–depositional zones can be distinguished there: sandy, clayey-sandy and sandy-clayey formations (small landforms in the eastern sedimentation area). The deposit thickness ranges from 550 to 750 m.

The next vertical group of the formations was also accumulated within the three main zones generally extending in parallel with the Teisseyre–Tornquist line. During the Ordovician, the eastern part of the Baltic hemisyneclise represented the shelf, and clayey–carbonate rocks up to 240 m in thickness were deposited there in the axial parts of smaller depressions, while considerably thinner rocks, mainly carbonate, accumulated within the uplifts. Farther to the west a clayey–carbonate formation was accumulated in the deep shelf environment, while black graptolitic shales and argillites occured in the western part (bottom and noncompensatory sedimentation area).

Silurian deposits show the largest thickness values – more than 3,300 m within the Baltic hemisyneclise. The horizontal pattern of the formations also suggests that the basin was dipping towards the ocean, the facies changing from shallow to a deeper shelf and further to a deep-water area of noncompensated downwarping. The three structural-facies zones identified are as follows (from east to west): carbonate, carbonate–clayey and clayey.

It is extraordinary that the largest thickening of the Caledonian complex coincides on the continent with the western termination of the Polotsk–Kurzeme fault belt. Marginal faults of this belt and some most evident fracture–flexure zones inside it are also located there.

It was noted that the axial zones of the Baltic hemisyneclise and the Gotland belt are not aligned with each other, but run at an angle on the Baltic Sea bottom, where the belt strike turns sharply to the northwest towards the Gotland belt.

The Hercynian structural complex, the thickness of which is as large as 800 m, even better fits within the Polotsk–Kurzeme fault belt limits. After a long break in sedimentation involving the whole latter part of Carboniferous time, the Cimmerian–Alpine complex with its rather thick deposits (as thick as 1,000 m) is well enough again in the western termination of the Polotsk–Kurzeme fault belt, though its thickest deposits are located slightly southwards.

ACKNOWLEDGMENTS

The research was performed with the financial support from projects No. X06P-045 and No. X05MC-058 of the Belarussian Fund of Fundamental Investigations (BFFI).

References

1. Allen Ph. A., Allen J. R. 1990. Basin analysis: principles and applications. *Blackwell Sci. Publ.* Oxford. 450 p.
2. Korablieva L., Sliaupa S. 2006. Relationship of the relief and potential fields of Lithuania and their influence on surface geodynamic processes. *Annual Report of the Lithuanian Geological Survey for 2005.* 52–54.
3. Lietuvos tektoninė sandara. 2003. Red. P. Suveizdis. Vilnius. 160 p.
4. Ostrovsky A. A., Flueh E. R., Luosto U. 1994. Deep seismic structure of the Earth's crust along the Baltic Sea profile. *Tectonophysics.* ***233***. 279–292.
5. Ostrovsky A. A. New Tectonic Belt in the Baltic Shield Region. 1998. *Izvestiya Physics of the Solid Earth*. ***34***(*6*). 429–435.
6. Popov M., Šliaupa S. 1997_1. Deep seated structural elements of Lithuania derived from magnetic field data. *Eurobridge Workshop Abstracts*. Vilnius. 65–66.
7. Popov M., Šliaupa S. 1997_2. Transformation of gravity field by using terracing operator: Implications for deep structure of Lithuania. *Eurobridge Workshop Abstracts*. Vilnius. 67–69.
8. Šliaupa S. Basic features of fault tectonics in Lithuania. 2006. *Annual Report of the Lithuanian Geological Survey for 2005.* 50–51.
9. Šliaupa S., Kačianauskas R., Markauskas D., Dundulis G., Ušpuras E. 2006. Design basis earthquake of the Ignalina Power Plant. *Geologija*. ***54***. 19–30.
10. Анкундинов С. А., Брио Х. С., Садов А. С. 1991. Глубинное строение земной коры на территории республик Прибалтики по данным сейсморазведочных работ ГСЗ. *Белорусский сейсмологический бюллетень (Минск)*. ***Вып. 1***. 111–117.
11. Гарецкий Р. Г. Основные черты тектоники и геодинамики Восточно-Европейской платформы. 2005. *Актуальные проблемы геологии нефти и газа*. Москва: ФГУП Изд-во «Нефть и газ» РГУ нефти и газа. 19–56.
12. Гарецкий Р. Г., Каратаев Г. И., Астапенко В. Н., Данкевич И. В. Полоцко-Курземский пояс разломов. 2002. *Доклады НАН Беларуси*. ***46***(*6*). 85–89.
13. Гарецкий Р. Г., Каратаев Г. И., Астапенко В. Н., Данкевич И. В. 2004. Геолого-геофизическая характеристика Полоцко-Курземского пояса разломов. *Літасфера*. ***2***(*21*). 10–27.
14. Гирин Р. Э. Глубинный сейсмический разрез литосферы по профилю Браслав-Плещеницы. 1991. *Доклады АН БССР*. ***35***(*7*). 640–644.
15. Мушкетов Д. И. 1935. Региональная геотектоника. Ленинград–Москва: ОНТИ. 528 с.
16. Островский А. А. 1995. Зона древнего рифтообразования под Балтийским морем. *Доклады РАН*. ***142***(*5*). 680–685.
17. Тектоника Прибалтики. 1979. *Труды Академии наук Литовской ССР* (*Вильнюс*). ***Вып. 33***. 90 с.

Radim Gareckij, German Karatajev

KLAIPĖDOS TEKTONINIS SIGMOIDAS

Santrauka

Polocko–Kurzemės lūžių juostą 600 km lydi subplatuminiai lūžiai: pietuose Šilutės–Polocko ir šiaurėje Liepojos–Loknos. Šių lūžių juostą liudija magnetiniai ir gravitaciniai laukai, taip pat daugelio lūžių suaktyvėjimas skirtingais tektoniniais etapais, kai kuriais atvejais net iki dabartinių laikų. Baltijos jūros akvatorijoje išskiriama Gotlando tektoninė juosta, nusidriekusi 500 km iš pietryčių į šiaurės vakarus.

Abi tektoninės juostos susijungia Klaipėdos šiluminės anomalijos rajone sudarydamos tektoninį sigmoidą (horizontalią fleksūrą, turinčią alkūninį išlinkimą paplitimo plane), mūsų vadinamą Klaipėdos vardu. Šis išlinkimas aiškiai pastebimas šiluminių anomalijų ir potencialių geofizinių laukų posūkyje. Klaipėdos sigmoidas yra sudėtingos sandaros ir turi daug ortogoninės ir diagoninės tįsos įtrūkių.

Радим Гарецкий, Герман Каратаев

КЛАЙПЕДСКИЙ ТЕКТОНИЧЕСКИЙ СИГМОЙД

Резюме

Полоцко-Курземский пояс разломов протяженностью до 600 км контролируется субширотными разломами: на юге Силутско-Полоцким, на севере – Лиепайско-Локновским. Он хорошо выделяется в магнитном и гравитационном полях, а также по активизации многих разрывов на различных тектонических этапах, а в некоторых случаях – вплоть до современных. В пределах акватории Балтийского моря выделен Готландский тектонический пояс, протягивающийся с юго-востока на северо-запад на расстояние до 500 км. В районе Клайпедской тепловой аномалии оба пояса соединяются, образуя тектонический сигмойд (горизонтальную флексуру в виде коленчатообразного изгиба простираний в плане), названный нами Клайпедским. Этот изгиб хорошо виден в повороте тепловых аномалий и потенциальных геофизических полей. Клайпедский сигмойд имеет сложное строение и нарушен многочисленными разрывами различных простираний как ортогональных, так и диагональных.