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# Faults and grabens of the southern part of the Northern Copper Belt and their significance in ore-forming processes

## Introduction

In the years 2012–2014, an extended examination of seismic and gravimetric materials as well as borehole logging data was carried out for exploration of copper deposits on the rim of Wolsztyn–Pogorzela High. The results of the detailed interpretation of geophysical materials were used in the subsequent programme of exploration and drilling operations. This entire project ultimately resulted in the discovery of three new Cu-Ag ore deposits (Nowa Sól, Sulmierzyce Północ, and Mozów) as well as numerous prospective areas, collectively referred to as the Northern Copper Belt (Speczik et al. 2022).

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Next to the identification of copper-bearing strata, geophysical surveying provides a wide range of information about the regional structure of the southern slope of the elevation. Seismic surveying identifies the tectonic structure of Permian and Mesozoic sediments; gravimetry indicates the location of local and regional tectonic zones and provides information about the shape of the sub-Zechstein substrate, and the use of borehole logging enables linking seismic interfaces with lithological and stratigraphic borehole logs.

Comprehensive geophysical surveying enables examination of the regional tectonic structure, grabens, and major faults of the Zechstein and its substrate, previously usually identified in a partial form – Figure 1. On the maps of the Zechstein and Mesozoic complex (Dadlez 1998) or the sub-Zechstein surface (Papiernik et al. 2000, 2008; Czapowski et al. 2018), in the zone of copper prospecting on the southern slope of the Wolsztyn–Pogorzela High, the tectonic lines are traced partially, or their shape has not been determined – Figure 2.

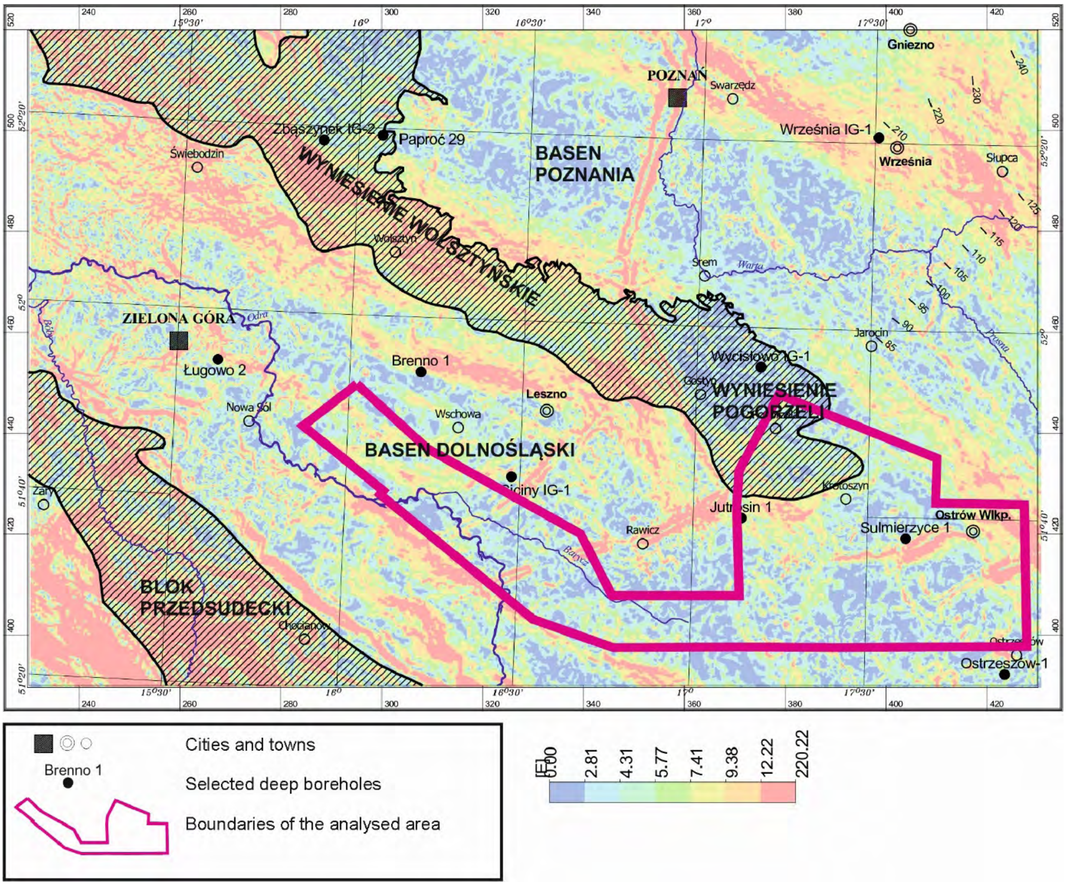


Fig. 1. Map of the horizontal gradient of gravimetric anomalies according to Rosenbach

Rys. 1. Mapa gradientu poziomego anomalii grawimetrycznych według Rosenbacha

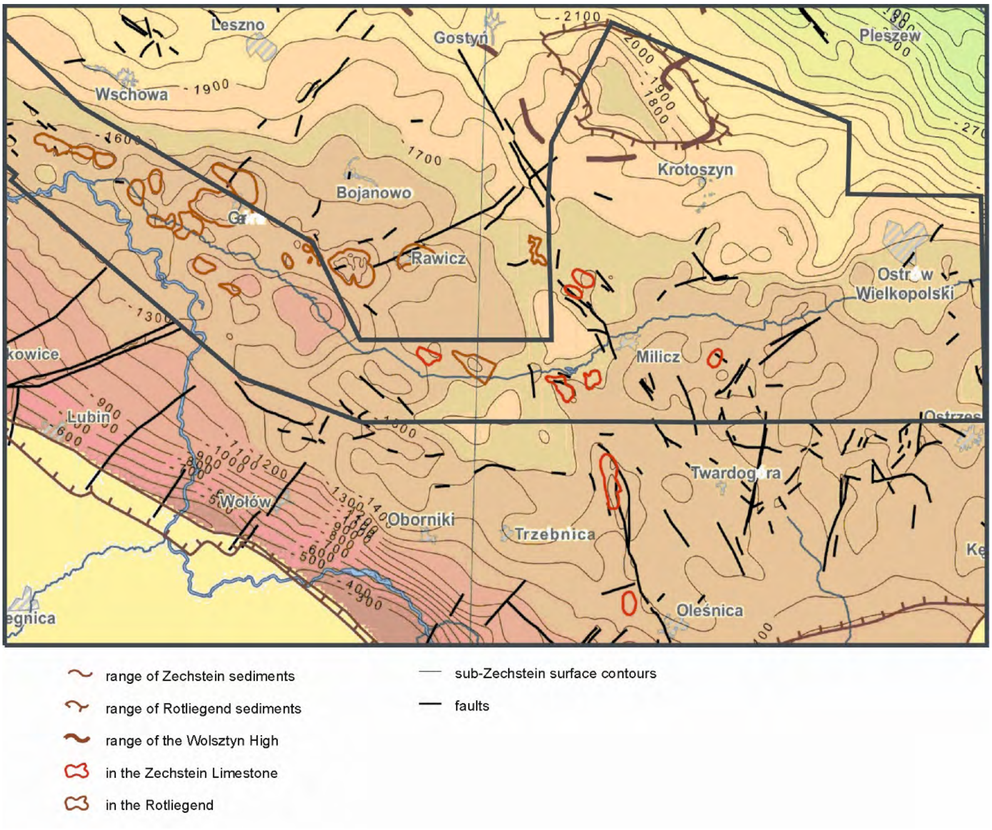


Fig. 2. Structural map of the top of the sub-Zechstein substrate (Papiernik et al. 2008)

Rys. 2. Mapa strukturalna stropu podłoża cechsztynu

The original methodology of geophysical surveying used for copper exploration enables the examination of Zechstein sediments, as well as the identification of the location of tectonic zones and the presentation of a detailed position of strata surrounding the dislocations, changes in their shape, and the depth of their roots – the presence of a graben or a fault. Information collected in this manner will allow for more detailed examination of the geological structure of the slope of the Wolsztyn–Pogorzela High, as well as the indication of possible migration pathways for hydrothermal solutions (Dziewińska et al. 2017; Dziewińska and Tarkowski 2018).

## 1. Methodology of research

A Bouguer anomaly map was prepared based on a map drawn for the needs of the paper (Dziewińska et al. 2017), supplemented with gravimetric data acquired for the preparation of gravimetric reports for Miedzi Copper Corp. (Pepel et al. 2011a, 2012b).

This map underwent frequency filtration using the Butterworth filter (BTWR). This filter enables linking the calculated anomalies with the presumed depth of the anomaly source, using the relationship between the size and shape of an anomaly and the depth of its origin. The second method of gravimetric analysis is an analysis of the correlation between Bouguer anomalies and a model of anomalies above a fault, with a specific density contrast, followed by statistical processing of the results. The paper uses the BTWR frequency filter because it easily adjusts its slope without changing the central wave number. The forms of the low- and high-pass filter are expressed by the following formulae:

$$L(r) = \frac{1}{\left[1 + \left(\frac{r}{r_0}\right)^n\right]} \quad \text{Low-pass filter} \tag{1}$$

$$L(r) = \frac{1}{1 - \left[1 + \left(\frac{r}{r_0}\right)^n\right]} \quad \text{High-pass filter} \tag{2}$$

↳ $r$ – is the wavenumber,
$r_o$ – is the central wavenumber of the filter,
$n$ – is the degree of the filter.
The band-pass filter is a product of both filters.

A formula for a prismatic body was used to calculate the central wave (Bhattacharyya 1966; Švancara et al. 2008):

$$\lambda_0 = \frac{2\pi}{r_0} = 2\pi\left[\frac{h_{bot} - h_{top}}{\ln\left(\frac{h_{bot}}{h_{top}}\right)}\right] \tag{3}$$

↳ $h_{bot}$ – is the depth to the bottom of the prism, and
$h_{top}$ – is the depth to the top of the prism.

To prepare vertical gravimetric sections, several maps for equal depth intervals were created using the BTWR filter, while adhering to the condition that the width of an interval cannot be smaller than the resolution of the gravimetric image. The maps were subsequently intersected by a vertical plane to achieve the distribution of regional and local anomalies in the depth domain for a given section line. The depths of the anomalies are presumed.

The results present changes in gravimetric effects originating from various geological complexes following an increase in their depth. They improve the level of detail of the image created on residual anomaly maps in terms of vertical changes in gravimetric anomalies and identify the horizontal and vertical ranges of individual geological elements with distinctive density properties. However, it should be pointed out that the determination of a depth scale on gravimetric cross-sections may be subject to an error resulting from the simplifications adopted in the interpretation. Covering the entire area in question with uniform gravimetric measurements in the form of semi-detailed mapping, and developing the results in the form of transformed maps allow for tracing most of the tectonic zones – Figures 3 and 4.

Presentation of seismic sections in the form of reflection coefficients (ERC) can be considered as the continuation of standard reprocessing of seismic records. Amplitude seismic traces converted into rows of reflection coefficients stand out due to their more precise determination of the position of reflective interfaces, and the identification of strata,

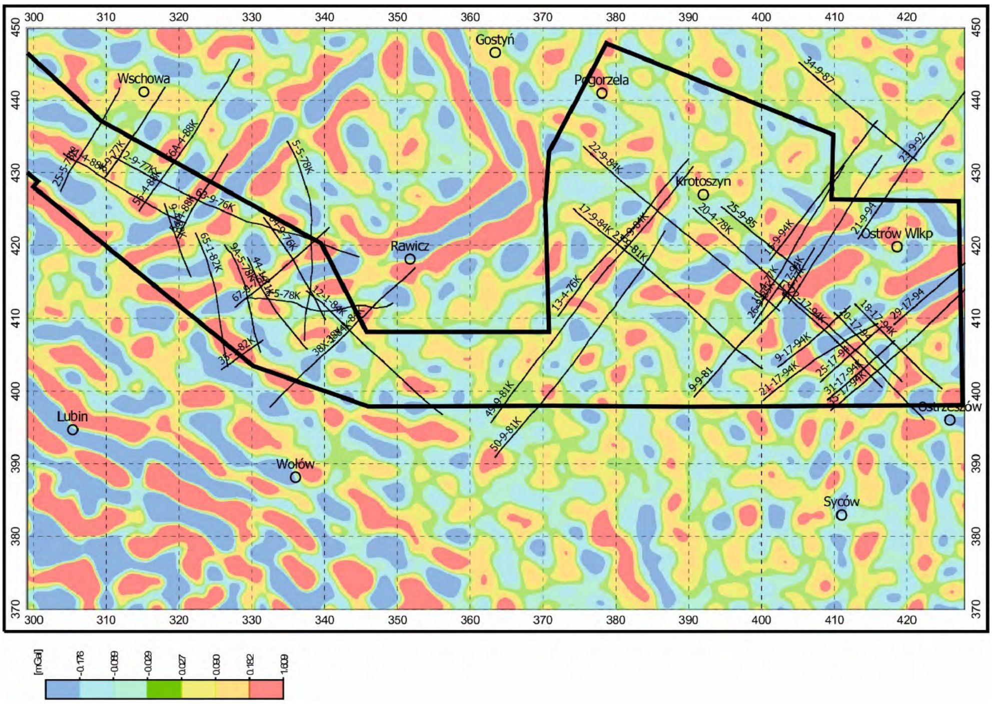


Fig. 3. Location of the analysed seismic sections against a transformed gravimetric map (anomalies in a presumed depth interval of 1–2 km)

Rys. 3. Lokalizacja analizowanych profili sejsmicznych na tle transformowanej mapy grawimetrycznej (anomalie w przypuszczalnym przedziale głębokości 1–2 km)

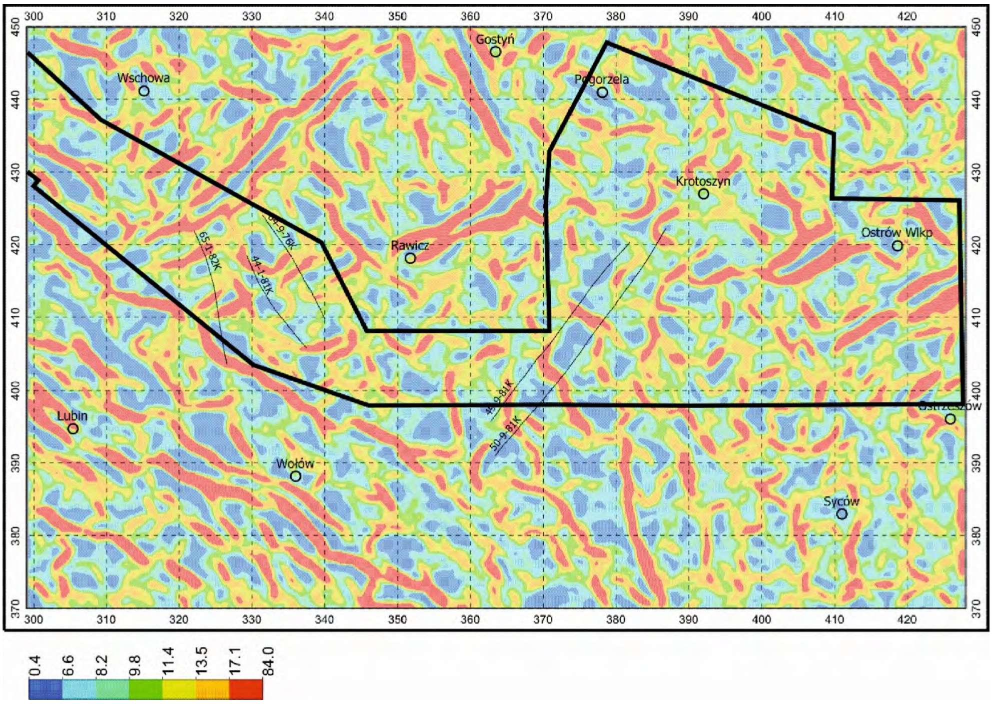


Fig. 4. Map of densities of linear gravimetric elements in a presumed depth interval of 1–2.5 km

Rys. 4. Mapa gęstości grawimetrycznych elementów liniowych
w przypuszczalnym przedziale głębokości 1– 2,5 km

often of small thickness ranging from 10 to 15 m; they detect all of their displacements along with the amplitude and the geometric characteristics. A wave record developed in the form of reflection coefficients constitutes a better approximation of seismic information relative to the natural geological environment. It enables the identification and tracing of selected strata and objects based on characteristic features, such as the magnitude and sign of a reflection coefficient, which is particularly important in zones with no continuous correlation, tectonic zones, salt pillows, and anhydrite ridges (Kiersnowski et al. 2010; Głuszyński and Aleksandrowski 2022).

ERC cross-sections supplemented with distributions of velocities in strata determined based on reflection coefficients provide a particularly good representation of stratigraphic complexes, and they identify zones of discontinuities in the form of tectonic contacts and zones of lithological and stratigraphic changes. They allow for distinguishing low-amplitude dislocations, as well as identifying and characterising the arrangement of layers in tectonic zones. It should be pointed out that the application of standard seismic records in the development of ERC cross-sections sometimes results in distorting their magnitudes of the determined amplitudes, which affects the values of the calculated reflection coefficients. This is due to the technical limitations of the apparatus used in the 1980s and 1990s, as well as the averaging and smoothing processes used in reprocessing. This subject, which is important for the process of calculating the reflection coefficients, may sometimes cause distortions during the quantitative application of reflection coefficients, as is the case during the determination of velocities in intervals or strata.

The conversion of wave-based seismic sections into the form of effective reflection coefficients (ERC) involves the extraction of an elementary pulse from the seismic record (along the entire section, it's part, and/or in a selected stratigraphic complex), and subsequently an iterative process of correlating and weaving the impulse with the seismic trace, as well as the calculation of reflection coefficients (Speczik et al. 2011). An ERC section allows for determining velocities in strata in a selected stratigraphic complex (in this case, in Zechstein) after inputting a velocity or distribution of velocities in the top or bottom of a stratum – this method enables more detailed identification of the position of tectonic zones delineated on ERC sections.

The analysed ERC sections with a total length of over 300 km are located in the area of 5 copper exploration concessions (Niechlów, Borzęcin, Krotoszyn, Janowo, and Sulmierzyce) – Figure 3. Transformations of a gravimetric map and tectonic maps were used to pinpoint the locations of the expected occurrence of faults or tectonic grabens: Nowa Wieś, Rawicz, Oleśnica, as well as Sulmierzyce N and S. The five selected sections had the expected locations of tectonic zones identified and supplemented with additional analysis in the form of the distributions of velocities in Zechstein strata and vertical gravimetric cross-sections (Pepel et al. 2011b, 2012a).

Transformations of gravimetric data are particularly important in places not covered by a grid of seismic sections, where they constitute perfect supplementation of a uniform examination of the area in question (Królikowski and Petecki 1995). The following gravimetric maps have been used: the maximum gradient axes and the vertical density interfaces, tracing tectonic changes in the Permian and Mesozoic intervals. The parameters of transformation were selected based on several options options and analyses reflecting the density changes in the selected depth interval. The reprocessed data served as a basis for the preparation of vertical gravimetric cross-sections, particularly interesting for tracing the tectonic zones as well as presenting the morphology and density of sub-Zechstein sediments. Cross-sections drawn along seismic profiles intersecting tectonic zones allow for characterisation of the usually complex geological structure of the Rotliegend and Carboniferous rock series. A more detailed analysis of the tectonic zones is presented for the Rawicz and Oleśnica grabens-faults. Both of the abovementioned tectonic elements stand out in the investigated area due to their structure.

## 2. Analysis of data

A study of the prepared geophysical reports served as a basis for choosing a pattern for analysing the tectonic zones, based on elements of the developed seismic and gravimetric materials. On the transformed gravimetric maps, there is a visible image of discontinuity lines of the Wolsztyn–Pogorzela High, along with grabens and faults visible in the gravimetric image on the southern slope of the elevation – Figures 3 and 4.

The development of gravimetric data facilitates the finding of regional tectonic zones recorded in the Triassic and Zechstein sediments on seismic cross-sections in the ERC version and facilitates the correlation of discontinuities on the neighbouring seismic sections. Most of the identified directions and positions of the tectonic zones remain in compliance with the zones of discontinuities on the transformed gravimetric map, as well as with the directions mentioned in geological reports (Dadlez 1998; Papiernik et al. 2008; Speczik et al. 2012).

Several variant ERC cross-sections and vertical gravimetric cross-sections compiled in Figure 5 were prepared to present the tectonic zones. They take into consideration the use of velocity distributions in the Zechstein, the image of reflection coefficients, as well as the

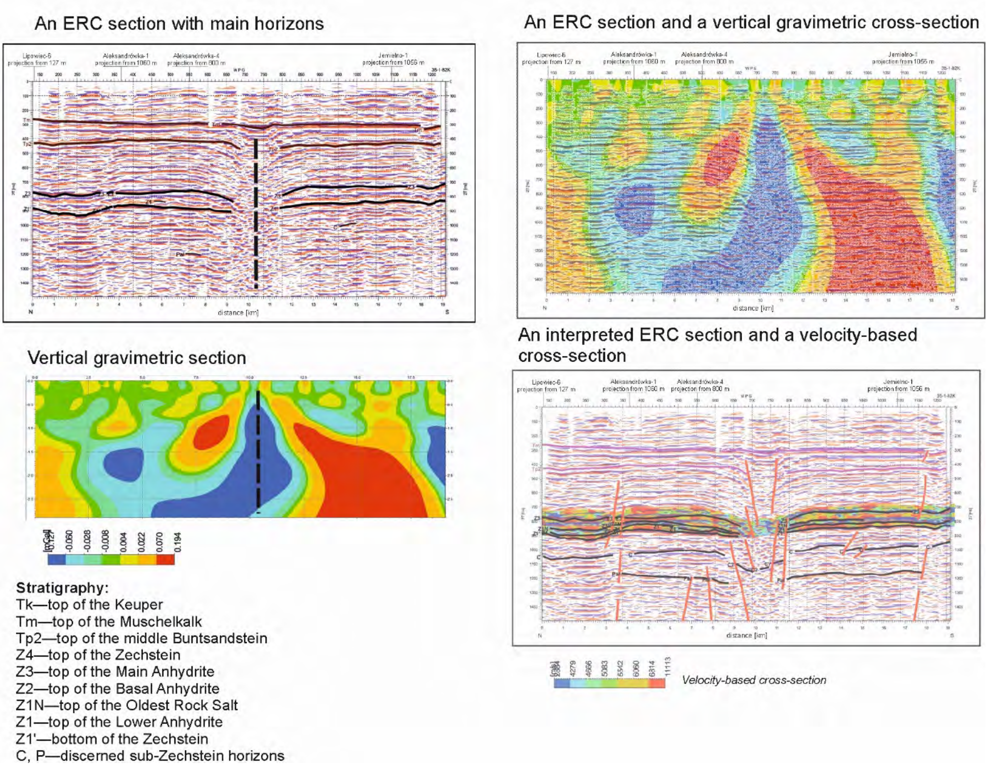


Fig. 5. The consecutive stages of analysing and identifying tectonic zones

Rys. 5. Kolejne etapy analizy i wyznaczania stref tektonicznych

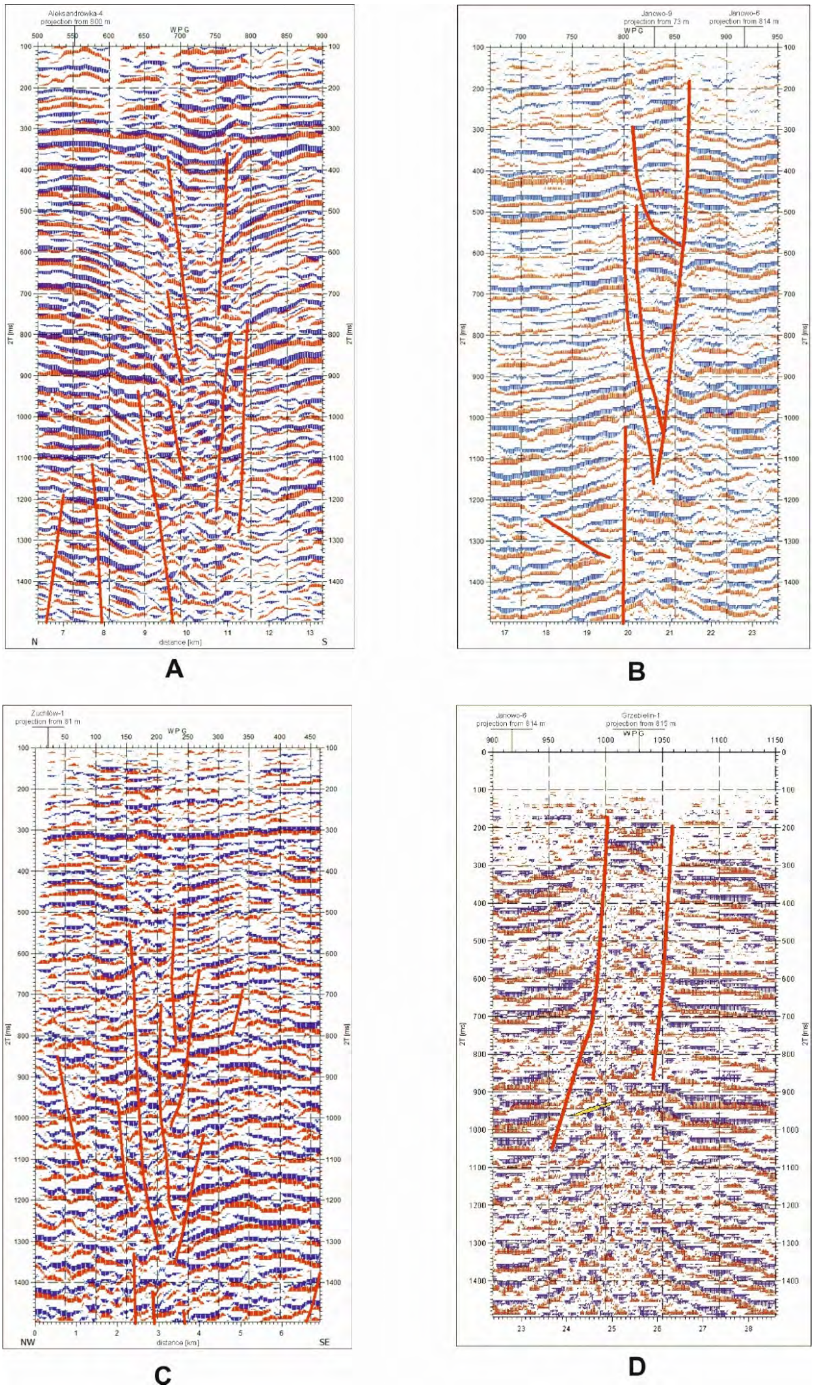


Fig. 6. The types of faults

Rys. 6. Typy uskoków

superimposition of seismic and gravimetric images of similar scales on both cross-sections. The cross-sections selected for the characterisation of tectonic zones allow for quite a precise representation of strata in the Zechstein and the Triassic, as well as the characterisation of physical parameters in the Zechstein and the sub-Zechstein substrate. Comparison of gravimetric anomalies with the tectonic zones is also interesting. Ultimately, ERC sections with the distribution of velocities compiled above a vertical gravimetric cross-section were employed to characterise the faults.

An analysis of tectonic zones demarcated on seismic sections in the ERC version allows for the identification of characteristic forms of dislocations, repeated on the neighbouring seismic sections, as presented in Figure 6.

They include:

- type “A” with visible inclination of reflective interfaces in the Triassic rocks, and lower flexure of the shape of Zechstein boundaries on both sides of the dislocations, accompanied by horizontal or almost horizontal arrangement of the top Triassic boundaries, e.g. the Tm interface; this form of dislocations exists on most seismic sections;
- type “B” with a narrow structure in a form similar to a fault, containing Triassic and Zechstein sediments, probably rooted in the sub-Zechstein substrate; its characteristic feature is the lack of a clear representation of the fault on the prepared gravimetric maps;
- type “C” which is a rather wide form of dislocation highlighted by numerous interruptions in tracing the boundaries of the Triassic and Zechstein, usually present in the places of changes in the depth of the sub-Zechstein substrate;
- type “D” which is a vertical characteristic zone with a width of about 500 m, lacking actual reflections, whose occurrence may be related to intense disruption waves, preventing characterisation and proper location of the fault zone; it is impossible to rule out the relation of such a wave-based image with the improper situation of the section concerning the dislocation zone, and the generation of diffraction waves or other harmful waves; this form of the tectonic zone is quite common, similarly to type “A”.

## 3. Results

### 3.1. Grabens and faults

In the analysed area of the slope of the Wolsztyn–Pogorzela High, there are visible tectonic zones south of Leszno, with a direction similar to SW-NE: Nowa Wieś and Rawicz, as well as tectonic lines with a direction similar to latitudinal – Sulmierzyce N and Sulmierzyce. On gravimetric maps, the relatively gentle shape of grabens with a similar width delineated by gradient lines, the maximum density of density interfaces, or relatively locally negative residual anomalies maintained throughout the entire analysed area of the slope is sometimes disrupted. The disruptions are probably caused by changes in the morphology of the sub-Zechstein substrate consisting of rocks of the Variscan level: Rotliegend and Carboniferous. Changes in the shape of the Rawicz graben are particularly characteristic, having been documented by results on seismic section 44-1-81K, caused by visible shallowing of the sub-Zechstein substrate. The issue of the continuation of dislocation zones in the substrate may be particularly interesting for documenting copper deposits, as they could constitute pathways for the migration of hot mineral solutions, which may be associated with the occurrences of ore-bearing zones. This subject has been presented in more detail in the discussion of the Rawicz and Oleśnica tectonic zones rooted in the substrate.

The choice of sections developed in the ERC version solves several tasks in the exploration of copper deposits; however, due to their location and the directions of some seismic sections, they do not ensure safe representation of the tectonics, including the grabens on the slope of the Wolsztyn–Pogorzela High. The relationship between the contouring of the graben and the location of a seismic section is particularly visible for the structures of Sulmierzyce, as well as sometimes during correlation of ERC sections on the neighbouring profiles intersecting other grabens, and when determining their location and contours. The location of a seismic section concerning a tectonic zone enables proper representation of the form and shape of a fault to a very large extent.

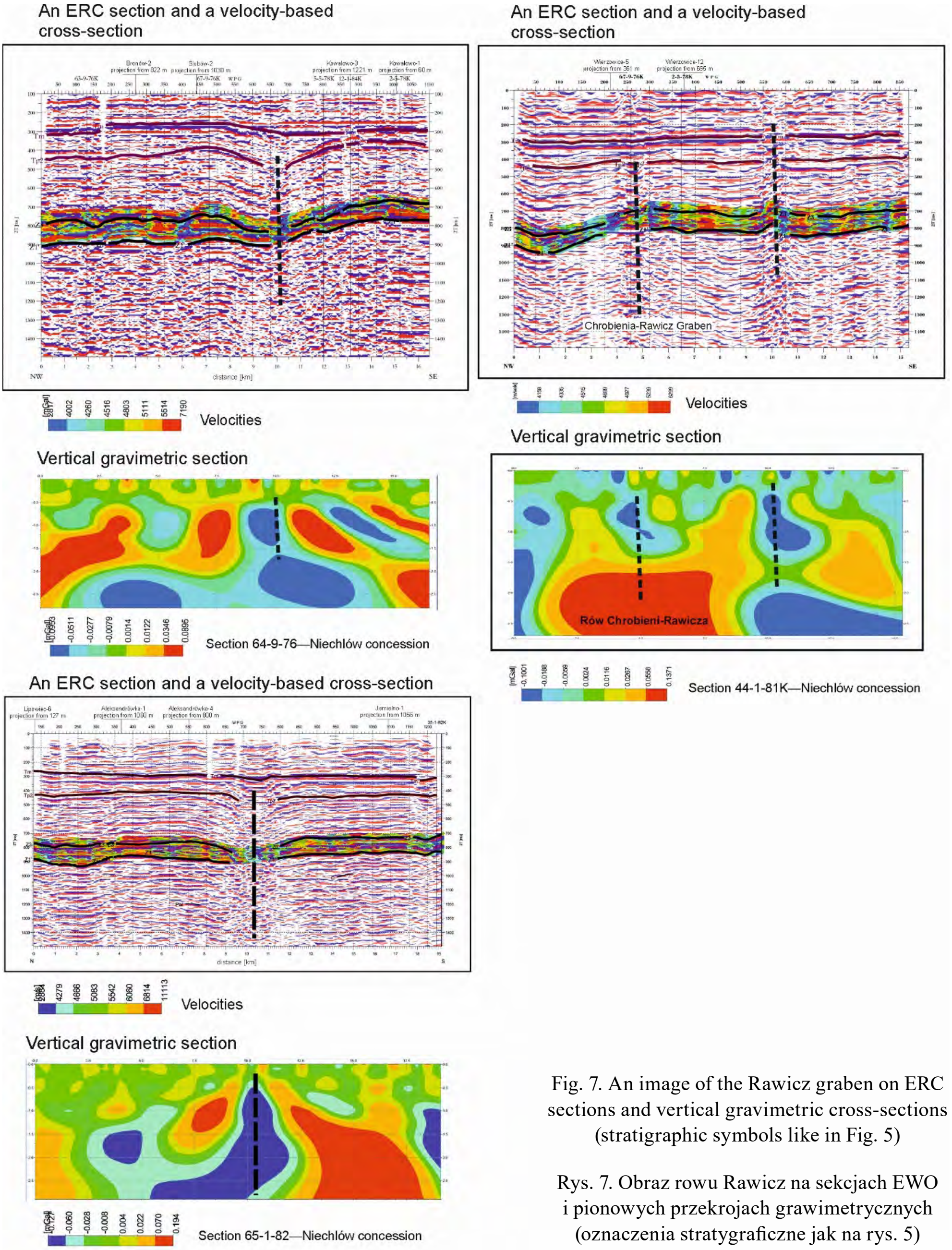
For most analysed tectonic zones discerned as tectonic grabens – regardless of the form of their occurrence – the faults which have been additionally recorded are situated almost parallel to the graben, at a constant distance of about 4–5 km. These dislocations appear regardless of the form of a graben, often in a less clearly pronounced form, with various shapes of dislocations, sometimes also in the form of zones with no results.

The lack of clear representation of the extension of the Szamotuły-Poznań graben towards Oleśnica in the transformed gravimetric image is an interesting element of the image of grabens on the slope of the Wolsztyna-Pogorzela High, one which is difficult to explain. The several performed variant transformations of the gravity field do not allow unambiguous identification of such a zone. This issue is partially explained by vertical gravimetric cross-sections documenting major changes in density in the sub-Zechstein substrate at a considerably greater depth compared to other tectonic forms. The gravimetric maps present the considerable displacements and complexity of the position of the individual sections of this graben.

The locations of five grabens have been documented on the slope of the Wolsztyn–Pogorzela High as a result of the performed seismic surveying, four of which have been confirmed by the transformed gravimetric maps. The results of the work allow for rather a precise location of these zones, and thus for supplementing the existing tectonic maps of the Zechstein and its substrate. The faults-grabens of Nowa Wieś and Sulmierzyce are similarly reflected in the gravimetric image, and ERC sections do not require special explanation. The more complex shape of the Rawicz and Oleśnica structures is discussed and depicted below.

### 3.2. The Rawicz and Oleśnica tectonic zones

The paper attempts to discuss the structure of the Rawicz and Oleśnica tectonic zones, with various representations in the geophysical image. Both tectonic structures stand out


An ERC section and a velocity-based cross-section

Velocities

Vertical gravimetric section

Section 64-9-76—Niechlów concession

An ERC section and a velocity-based cross-section

Velocities

Vertical gravimetric section

Section 44-1-81K—Niechlów concession

An ERC section and a velocity-based cross-section

Velocities

Vertical gravimetric section

Section 65-1-82—Niechlów concession

Fig. 7. An image of the Rawicz graben on ERC sections and vertical gravimetric cross-sections (stratigraphic symbols like in Fig. 5)

Rys. 7. Obraz rowu Rawicz na sekcjach EWO i pionowych przekrojach grawimetrycznych (oznaczenia stratygraficzne jak na rys. 5) due to their complex characteristic geological structure and numerous changes in the shape of the individual sections of the dislocations. Figures 7 and 8 present seismic and gravimetric images on profiles intersecting dislocations with directions similar to perpendicular concerning the fault in dislocation zones. The location of the sections characterising the dislocations is presented in Figure 3. Each dislocation is presented in the form of an ERC section and a vertical gravimetric cross-section, covering a similar depth interval. Due to the nature of geophysical information for the needs of the publication, the vertical scale of the gravimetric cross-section has been shrunk by approx. 50%.

The Rawicz graben has been documented in 5 geophysical sections, 3 the most characteristic of which are presented in the paper. In the central part of the analysed section of the dislocations, in the image of the seismic Z1 interface on section 44-1-81K, there is a visible elevation in the sub-Zechstein substrate, confirmed by the image of gravimetric anomalies. The change in the shape of the sub-Zechstein substrate results in a complex image of dislocations, covering a considerable segment of the seismic profile in the form of irregular, inert segments of seismic interfaces. On the other hand, on the sections delimiting said elevation

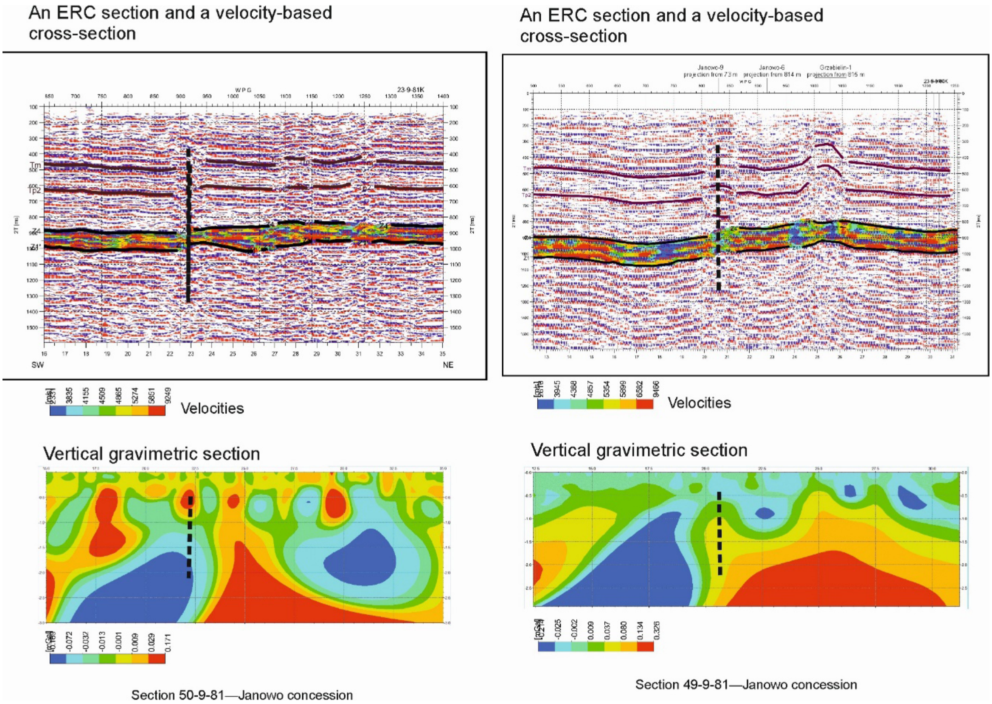


Fig. 8. An image of the Oleśnica graben on ERC sections and vertical gravimetric cross-sections (stratigraphic symbols like in Fig. 5)

Rys. 8. Obraz rowu Oleśnica na sekcjach EWO i pionowych przekrojach grawimetrycznych (oznaczenia stratygraficzne jak na rys. 5) from the east and west, there are regular inclinations of reflective interfaces visible both in the Triassic and in the Zechstein – sections 65-1-82 and 64-9-76. It can be concluded that the Rawicz fault (graben) constitutes an area of wide direct contact between the substrate rocks and the Zechstein-Triassic overburden, interesting for the exploration of mineral ore.

The Oleśnica fault, which on the geological maps constitutes an extension of the Szamotuły–Poznań graben, is recorded less visibly in the geophysical images, both seismic and gravimetric. On ERC sections, there is a visible single fault with a low amplitude, in a form barely distinguishable from other tectonic zones. The image of gravimetric anomalies also differs from other recorded faults-grabens. This may be caused either by its shattered variable arrangement or by its more local and not regional location.

## Conclusions

The performed analysis of geophysical reports for copper and silver exploration allows for detection or more detailed identification of the position of regional tectonic zones on the

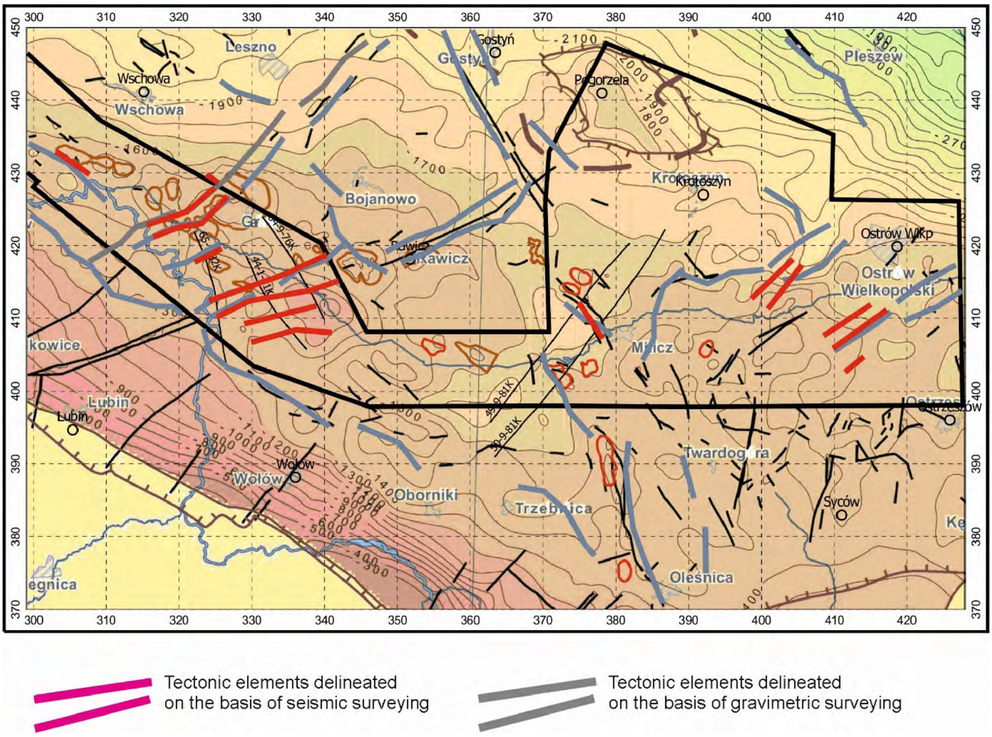


Fig. 9. Map of the top of the sub-Zechstein substrate (Papiernik et al. 2008) with tectonic elements delineated on the basis of ERC sections and vertical gravimetric cross-sections

Rys. 9. Mapa stropu podłoża cechsztynu z wyznaczonymi elementami tektonicznymi na podstawie sekcji EWO i pionowych przekrojów grawimetrycznych southern slope of Wolsztyn–Pogorzela High. The actual image of grabens and faults has a complex nature, justified by the shape of the sub-Zechstein substrate.

Based on the developed materials, the dislocations of Nowa Wieś and Rawicz located in the western part of the studied area have been delineated in an area between dislocations associated with tectonic zones in the neighbourhood of the Wolsztyn–Pogorzela High and the Fore-Sudetic Block. The results of the paper allow for supplementing the location of both tectonic zones outlined on the existing structural maps of the sub-Zechstein substrate. The Rawicz tectonic graben is particularly interesting for further geological studies, being divided by a characteristic structure in the sub-Zechstein substrate, which changes the tectonic image considerably – Figure 9.

The Oleśnica fault is different from the abovementioned tectonic forms, probably constituting an extension of the Szamotuły-Poznań graben. This fault does not have the form of a graben, but a single displacement of strata, usually with a minor amplitude. Since it was

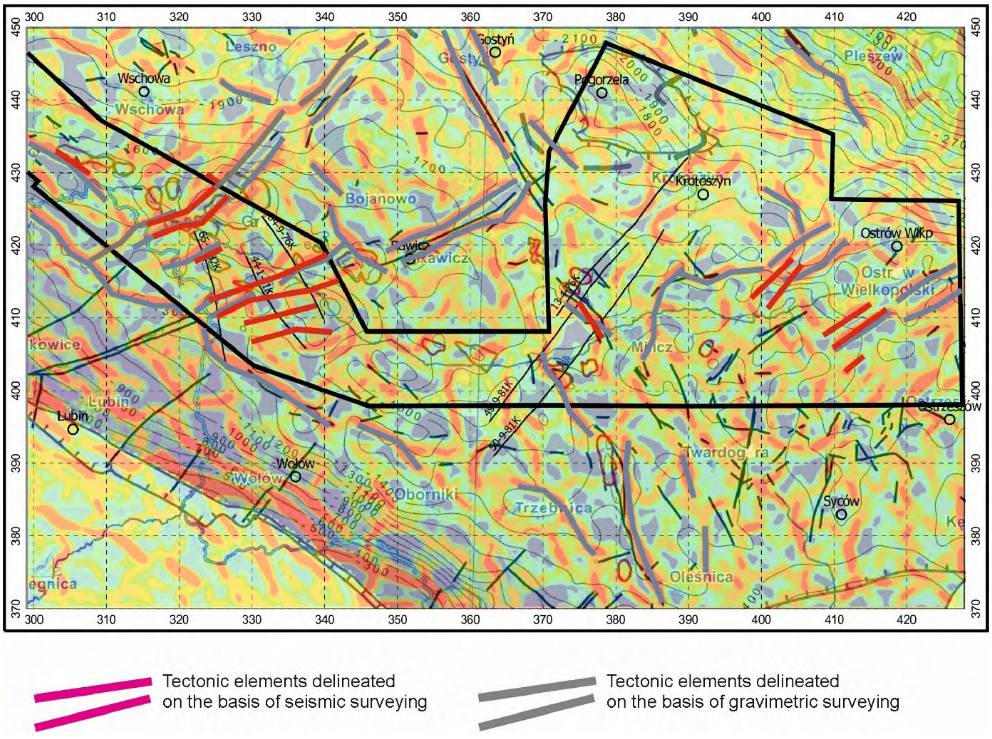


Fig. 10. Density map of gravimetric linear elements against a map of the top of the sub-Zechstein substrate, with tectonic elements delineated on the basis of ERC sections, vertical gravimetric cross-sections, and transformed maps

Rys. 10. Mapa gęstości grawimetrycznych elementów liniowych na tle mapy stropu podłoża cechsztynu z wyznaczonymi elementami tektonicznymi na podstawie sekcji EWO, pionowych przekrojów grawimetrycznych i transformowanych map only delineated on two seismic sections, and it is difficult to identify on transformed gravimetric maps, it requires confirmation in further studies of the seismic sections. This conclusion is particularly important, since this tectonic zone may be displaced by transverse zones visible on the gravimetric map. Compared to other grabens, the Oleśnica fault has another, less characteristic representation in the gravimetric image – Figure 10.

In the Sulmierzyce region, there are two visible tectonic grabens with a width of several kilometers, which are not associated with known tectonic zones. Both depressions were delineated with relatively low precision, resulting mainly from the lack of seismic profiles intersecting these zones. The southern fault is additionally pronounced mainly as a rectangular zone with a lack of actual records. The grabens of Sulmierzyce probably have a different nature from the structures discussed earlier – Figures 9 and 10. The highest-grade ore mineralisation of the Sulmierzyce Północ deposit is associated with the presence of these grabens (Speczik et al. 2021).

During further investigation, it is necessary to explain the origin of the characteristic bent form of layers in the Triassic and Zechstein, visible on numerous seismic sections. The analysis should also include reasons behind the lack of records in some grabens, and whether they are related to the direction of the seismic section with respect to the fault, or to the lack of actual wave records.

All of the seismic sections used in the paper were prepared in the previous century, mostly in the 1980s. The ability to digitise printed sections and reprocess these data by the current procedures allows for deriving from them a seismic image that is more detailed and covers a larger depth interval compared to historical sections. This is extremely important for the exploration of the investigated areas in the context of the growing costs, and especially restrictions in the execution of outdoor operations in seismic surveying.

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# FAULTS AND GRABENS OF THE SOUTHERN PART OF THE NORTHERN COPPER BELT, AND THEIR SIGNIFICANCE IN ORE-FORMING PROCESSES

## Keywords

tectonics, reprocessing and reinterpretation of geophysical data, Northern Copper Belt

## Abstract

The paper presents research results obtained during the exploration of copper and silver deposits on the southern rim of the Wolsztyn–Pogorzela High in terms of identification of the regional geological structure of Permian and Mesozoic sediments, with particular focus on tectonic zones. It discusses a new methodology of developing seismic and gravimetric data in the form of sections of effective reflection coefficients (ERC) and vertical gravimetric cross-sections, which in combination with borehole logging allowed for the identification or an update of the knowledge about regional tectonic zones which are missing from the maps of the sub-Zechstein substrate prepared to date. The discussion of the methodology uses the example of two tectonic zones: the Rawicz and Oleśnica grabens. Conversion of seismic sections into ERC cross-sections made it possible to trace strata of smaller thickness and facilitated the identification of low-amplitude dislocations. Vertical gravimetric cross-sections confirm the credibility of the interpreted faults and grabens, also showing whether the faults are deeply rooted. Historical geophysical materials developed in this manner constitute an important supplement to the identification of the geological structure of the Lower Silesian Basin and in particular, the tectonic zones which may provide ways of migration and circulation of solutions, as well as the ore generation zones. The collected materials may be used to supplement the structural and tectonic maps of the sub-Zechstein substrate in the Lower Silesian Basin, and the applied methodology and data analysis may be used in other regions of Poland.

# USKOKI I ROWY POŁUDNIOWEJ CZĘŚCI PÓŁNOCNEGO PASA MIEDZIOWEGO I ICH ZNACZENIE DLA PROCESÓW ZŁOŻOTWÓRCZYCH

## Słowa kluczowe

tektonika, przetwarzanie i reinterpretacja danych geofizycznych, Północny Pas Miedziowy

## Streszczenie

W artykule przedstawiono wyniki prac badawczych uzyskane podczas poszukiwań złóż miedzi i srebra na południowym obrzeżeniu wyniesienia Wolsztyn–Pogorzela pod kątem rozpoznania regionalnej budowy geologicznej utworów permsko-mezozoicznych, ze szczególnym uwzględnieniem stref tektonicznych. Omówiono nową metodykę opracowania danych sejsmicznych i grawimetrycznych w postaci sekcji efektywnych współczynników odbicia EWO i pionowych przekrojów grawimetrycznych, które w powiązaniu z geofizyką otworową dały możliwość uściślenia lub rozpoznania regionalnych stref tektonicznych, których nie ma na opracowanych dotychczas mapach podłoża podczechstyńskiego. Metodykę omówiono na przykładzie dwóch stref tektonicznych: rowu Rawicza i Oleśnicy. Przetworzenie sekcji sejsmicznych w przekroje EWO umożliwiło śledzenie warstw o mniejszej miąższości oraz ułatwiło rozpoznanie małoamplitudowych dyslokacji. Pionowe przekroje grawimetryczne pozwalają uwiarygodnić wyinterpretowane uskoki, rowy oraz pokazują czy uskoki są głęboko zakorzenione. Tak opracowane archiwalne materiały geofizyczne są istotnym uzupełnieniem rozpoznania budowy geologicznej basenu Dolnośląskiego, a w szczególności stref tektonicznych, które mogą być drogami migracji, krążenia roztworów i stref generacji kopalin. Zebrane materiały mogą zostać wykorzystane do uzupełnienie map strukturalno-tektonicznych podłoża cechsztynu w basenie Dolnośląskim a zastosowana metodyka i analiza danych może być zastosowana w innych regionach Polski.