Short Reports

GEOMETRICAL CORRELATION OF STRATIGRAPHIC SURFACES AS THE WAY FOR LEVEL OF INVESTIGATION OF THE OIL FIELD STRUCTURE

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The article was observed the way of geometric correlation sign for decision of the problems oil-and-gas in geology. It was developed the method of the study of deposits without oil well drilling. It was revealed the differences of the structural maps of stratigraphic boundary of the oil deposit.

Geometrization of depths is a method of graphic modeling and it is integral element of the rational exploring and development deposits. Geometrization of depths is identifying phenomena, which it is pass in earth crust [4]. For using the geometric method was select one deposit situated in Permskiy Krai. For example of the interpretation data were choose famennian reef structures of this deposit.

Two structural maps of boundary upper famennian oil accumulation on 2005 and 2009 years are built with use the computer program.

On structural maps it is necessary to place the square network a point. From each point it is necessary to draw gradients (or normal). The size cell depends of that, how in detail it is necessary to study the territory.

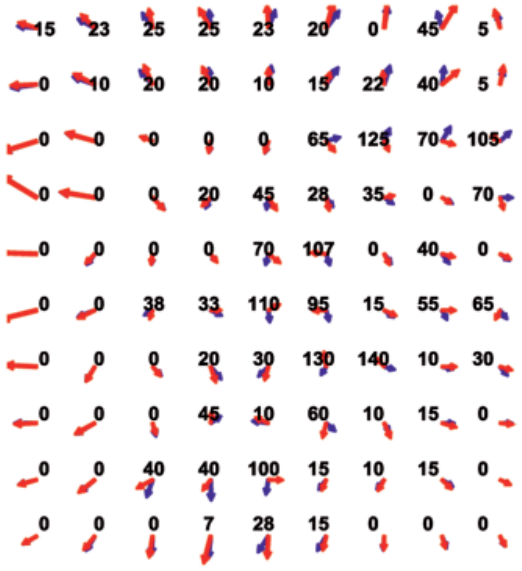

Fig. 1. Scheme of angles between gradients of the structural plans surfaces

The following stage it is an imposition of the maps gradient 2005 and 2009 years. It is the measured angles between gradient by protractor. The angle recorded in junction of the net (Fig. 1). The gradients are revealing the area of the mismatch.

Map of coefficients of correlation are make on cosines of angle between gradients. We get map of the mismatch of the structural plans of upper boundary on 2005 and 2009 years (Fig. 2).

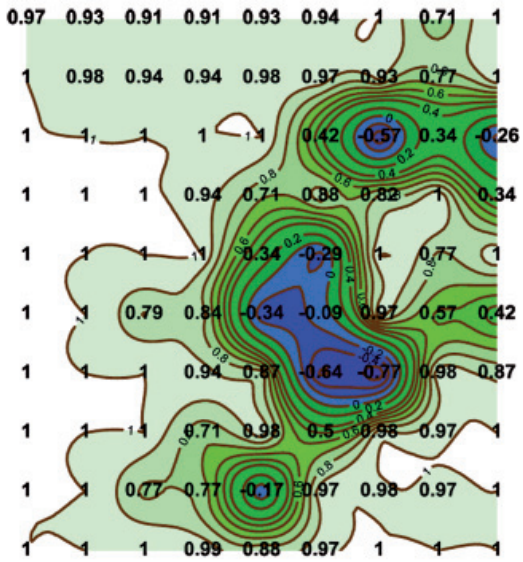

Fig. 2. Coefficients correlation between structural maps surfaces

The coefficients of correlation changes from –1 to +1. The nearer to +1, the more coincidence this corresponds to the concordant correlation of field, –1 is anticordant and zero is discordant.

The analysis of the map coefficient correlation make it possible to reveal the area, on which conception about configuration of the construction did not change, and make it possible to reveal the area conception about construction which greatly changed.

For revealing the general regularity of the change the under investigation value it is conduct the smoothing. Most easy way smoothing it is «slippery window». The regularities of the different order can be revealed from size window. The value window it is choose depending on required to accuracy. The smoothing by window of the small size does not remove the influences of the casual deflections. But big window brings to the loss of data.

Using of «slippery window» the different size it makes possible to shorten time and facility on revelation of area with the most change the under study sign.

This method of geometric correlation makes it possible:

1) to get information about level of investigation of the oil field structure and about construction of deposit without well-drilling;

2) to identify little-studied area for building of the qualitative model of deposit;

3) to identify area for well-drilling which required for building of the models deposit and for refinement reserves oil;

4) to ascertain the moment in chronologies of well-drilling, which make it possible to cut material costs;

5) to create the algorithm an information handling on computer

References

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A COMMON SCALE OF THE STAGES OF A GEOASTRONOMICAL CHRONOLOGY

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For the first time on the basis of a "Geocontinuum" and a "Geoastronomical" continuum "A Common Scale of Stages of Geoastronomical Chronology" is constructed. Is offered new Common Scale of Geoastronomical Chronology from the Big Bang to the Present Time. The author uses this scale in lectures on historical geology for students and in a geological museum.

For the description PreArchean chronology of events of formation of the Earth, the Solar System, method representation about "continuum" [6, 4] is used.

The time scale continued in area of PreGeological events of the past, possible to interpret as "a GeoAstronomical scale" for events PreArchean time down to the moment of formation of the Our Universe [8, 1].

Attempts of construction of a calendar PreArchean time were undertaken earlier [2, 3].

The Principle of Stenon (for the stratigraphical and the geochronological scales) illustrates stratigraphical continuum ("geocontinuum"). For construction of "a General Scale of Stages of GeoAstronomical Chronology" it is offered to use of the Principle Stenon as events-and-time, not only straton-and-time.

In this case the common geochronological scale becomes is a part of "Common Scale of Stages of GeoAstronomical Chronology" of events at the Universe and at the Earth.

Representation of events-time (chronological), and not just only stratigraphical geocontinuum allows to consider Archean-Cenozoical a stage as a component of an interval of time from formation of the Our Universe (13,72 ± 0,12) milliard years [1, 7] up to «Present Time». In this case the general geochronological scale becomes a part of "the General Scale of Stages of geoastronomical chronology". The geoastronomical scale allows to order and describe chronology of events from the Big Bang to the Present Time (Table).

A Common Scale of the Stages of a GeoAstronomical Chronology

Stages	GalaYear	Gelion	Acron	Eon	Era	Period	From beginning (in milliard years)
1	2	3	4	5	6	7	8
23	Retrospective Galactic Year № 1	Geozoic (GEOZ)	Neozoic (NZ)	PH Phanerozoic	KZ	Qrcnt	0
						Q	0,018
						N	0,023
						E	0,065
22	RGY № 2 Mesozoic				MZ	K	0,15
						J	0,20
						T	0,25
21	RGY № 3 Hertsynian				PZ	P	0,30
						C	0,35
						D	0,40
20	RGY № 4 Caledonian					S	0,45
						O	0,50
						Є	0,54