

CHANGING OF GEOLOGICAL ENVIRONMENT UNDER THE INFLUENCE OF NON-RECURRENT FAST PROCESSES

E.S. Chernykh

Scientific advisor professor V. N. Salnikov

National research Tomsk Polytechnic University, Tomsk, Russia

According to N. F. Reimers, (1992), the geological environment is the complex of geomorphologic, geophysical and geochemical conditions in which a body (including man and his household) occurs [3]. How to change these conditions when exposed to non-recurrent fast processes? The special relevance of studies of the geological environment presents problems in geology associated with oil and gas development in the Arctic. The term "Non-periodic rapid phenomena in the environment" was first introduced in 1988, in course of the first all-union interdisciplinary scientific-technical school - seminar "Non-periodic rapid phenomena in the environment" [4].

Among natural and anthropogenic-technogenic phenomena there are natural speed non-recurrent phenomena, such as earthquakes, tsunamis, landslides, meteorites, fireballs, craters, diatremes, electromagnetic systems in the lithosphere, atmosphere and space. For example, the Tunguska meteor exploded in the sky over the Tunguska taiga in the summer, in June of 1908 or the appearance and the span of long-lived plasma formations. The anthropogenic-technogenic phenomena include nuclear weapons testing, accidents at nuclear power plants, hydroelectric power plants, industrial plants, mining strikes and explosions of methane in mines; for example, the accident at the Chernobyl nuclear power plant, the Sayano-Shushenskaya hydroelectric power station on the Tomsk Siberian chemical Kombinat (SCK) and numerous explosions in the mines of Kuzbass, as well as the launching of missiles for various purposes [7].

Numerous ordered structures may occur upon closure of the electromagnetic fields and the creation of long-lived plasma objects (quasi-crystals) in the lithosphere and the atmosphere, which at the exit to the surface in areas with Quaternary sediments (clay, sand, loam, soil) can lead to the formations of pits (Fig. 1,2). On the outskirts of the city of Sasovo, Ryazan oblast, on 12 April 1991 night 1991 night at 300-400 meters from the oil depot explosion occurred with the formation of pit. At the epicenter of the explosion crater, almost round in shape with a size 31x28 m and a depth of about 4 meters. Military experts estimate the TNT equivalent of the explosion in capacity of 20-25 tons. In the center of the crater was discovered a hill with a height of about five feet [5]. In the same year, June 8, at 14.26, there's a message about the explosion a few kilometers from the village of Frolovskoe (a suburb Sasovo). On the farm "New way" was discovered, a new "pit". There were no charred and broken trees, no smell of gunpowder, but only a perfect crater with a diameter of 11.5 meters, nearly 4 meters deep (~3.5 m) occurred with no mound in the middle which was up to 40 cm tall, and at the bottom there was a flat layer of soil, compacted to a state monolith. The variation in soil was up to 300 m. The background radiation is normal.

It is assumed that the energy accumulation in the lithosphere and its isolation from rocks occurs under different types of excitation of seismic activity and preparation of the earthquakes caused by the production of nuclear explosions at the Semipalatinsk test site (until 1989), in Chebulinskoe district, Kemerovo region (1984). Therefore, it is likely that pits and holes in the earth were formed as a result of the energy of the lithospheric unloading due to mechano-electrical transformations in rocks during the flow of natural and anthropogenic processes. Similar pits formed in the heart of the Geneva lakes [8]. In the night from 3 to 4 February on the winter field of the suburbs of Geneva formed the biggest hole in this area of Switzerland, with a diameter of 10 m, depth 12 m, with a volume of 942 m<sup>3</sup>. This hole was formed over the portion of the underground tunnel of the Geneva motorway, which was in this location at a depth of 18 m. As H. P. Shaffer said, "the formation of these pits, as in England, was at night, and there were no witnesses of their occurrence". All the holes had one feature in common: they were all round in shape, the walls are steep with an angle of 90°, neither one of them no traces of turf, which would have to remain in the natural subsidence of the soil. A good example of the output of the lithosphere electromagnetic vortex is the formation of pits in the fields Panovskogo farm in Krapivinsky district, Kemerovo region.

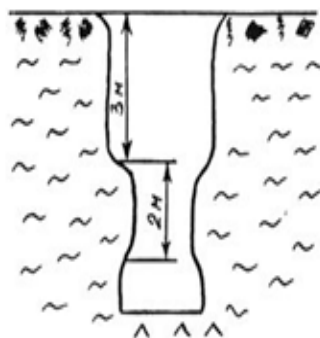


Fig. 1. State Farm Banowsky. The pit appeared at the end of April 1990. The Picture was made by V. N. Sal'nikov, 1990

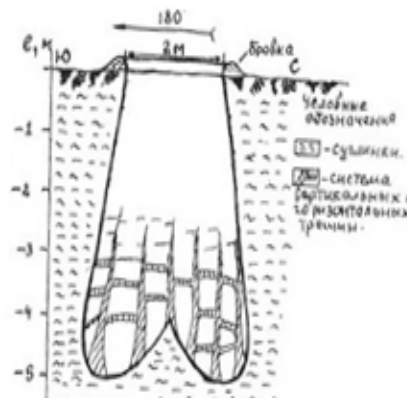


Fig. 2. Pit in the fields AOZT "October" p. Zorkaltsevo Tomsk district. The Picture was made by V. N. Salnikov after the Tomskmoloko's materials

On 26 May 1998, by the employees of the Territorial center of Tomskgeomonitoring a survey was conducted of the plow formed on the surface of the Earth on arable farmland AOZT "October". "Plow" discovered by an employee of the farm North-East of the village of Zorkaltsevo, 1.8 km away. The same hole was formed on the fields of Izhmorskiy district of the Kemerovo region in June 1993 (photo 1). Two "holes" appeared on the peninsulas of Yamal and Gydan. Third found on the Taimyr Peninsula at the mouth of the Yenisei river in April 2012. The diameter was 4 meters and a depth - 100 m. The soil was scattered over a 900 m. The researchers assume that the pits were formed due to the accumulation of methane with the subsequent release of soil [2]. In addition to the formation of pits, the changes in the topography of electromagnetic systems at locations of lithosphere relaxation may be accompanied by occurrence of flattened forest zone, fires, explosions and destruction of manmade structures.



*Fig. The hole in Izhmorskiy district of the Kemerovo region. In the centre the Chairman of regional Council of Izhmorskiy district. On the right there is V. N. Salnikov. Photo by G. Tokarenko*

Everything observed in the atmosphere, the lithosphere and outer space objects and field structure in the form of plasmoids of various shapes, which generate pulses in a wide frequency range from  $\gamma$ -ray to radio, light and heat is termed "electromagnetic system". The processes of generating and releasing electromagnetic energy accumulated in the lithosphere and caused by natural processes were the beginning of the scientific-technical progress [6]. The analysis of observations of electromagnetic systems and the calculation of the areal density of their displays, by the example of France, allows us to relate the generation of parts of plasmoids due to the physico-chemical and geodynamic processes in the lithosphere, mantle and possibly the core of the Earth. These processes lead to the formation of the heat-mechanical-radioelectrico of minerals, rocks, and water, volumetric charge where the relaxation is capable of generating electromagnetic system. Natural electrets were obtained by Salnikov V. N. when measuring temperature dependences of conductivity and electromagnetic emissions of the minerals and rocks of different composition, that is, in minerals and rocks observed as paleomagnetism and paleolithical [1,7]. The exit surface electromagnetic systems are dedicated to the articulation of geological structures, tectonic zones crossing lineaments mechanical stresses drainage network. The diversity of forms and spectra of electromagnetic radiation of plasmoids can be explained on the basis of the quasi-crystalline structure of the objects, their convergence, and polymorphism.

#### References

1. Kulin E.T. Ionnaya teoriya elektronogo sostoyaniya vody. [Electronic resource]: elektretstateofwater. blogspot.com/2015/07/blog-post.html
2. Kungurceva I. Na Taymyre obnaruzhen anomalnyy krater. [Electronic resource]: <https://utro.ru/articles/2014/07/25/1205730.shtml>
3. Mironov V.V. Sovremennye filosofskie problemy estestvennyh, tehniceskikh i socialno-gumanitarnykh nauk: uchebnyk dlya aspirantov i soiskateley uchyonoy stepeni kandidata nauk.- M.: Gardariki,2006.-639 c.
4. Neperiodicheskiye bystroprotekayushchiye yavleniya v okruzhayushchey srede/ Thesis report the First all-Union interdisciplinary scientific-technical school - seminar (7-18 1988). – Tomsk, 1998.- U.I. – 124 p.; U. II. -144 c.; Ч.III.- 230 p.
5. Olkhovtov A.Y. Sasovskiye vzryvy 1991 i 1992 y.// Fizika Zemli. – 1995. - №5.- P. 28-36.
6. Protasevich E.T., Skavinskiy V.N. Geofizicheskiye fonovyye obyekty i yavleniya. Po stranitsam arkhiva Zhandarmnskogo upravleniya perioda pervoy Mirovoy vojny.- Tomsk: Izd.- vo TPU, 1996.-120 p.
7. Salnikov V.N., Arefyev K.P., Zavortkina S.D., Potylitsyna Ye.S., Lukyanova Ye.V., Fedoshchenko V.I., Gozhin E.E. Samoorganizatsiya fiziko-khimicheskikh protsessov v dielektricheskikh prirodno-tekhnogennykh sredakh.- Tomsk:STT, 2006.- 524 p.
8. Schaffer H.P. Ratselhafte Locher in der Schneez// PSI-Journal.-1991..№3.-P.12-14.