THE PROBLEM OF SCIENTIFIC RESEARCH OF THE RISING OF GEOTHERMAL WATERS IN THE OIL AND GAS AREA OF BUKHARA-KHIVA TO THE SURFACE WITH ITS OWN PRESSURE

Mansur Makhmudovich Zokhidov
Professor
Makhsudali Makhmudalievich Kambarov
associate professor,
Makhkamov Nurlan Ravshan oglu
Tashkent university of architecture and construction
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Abstract. The article presents a scientific approach to calculating the exit to the surface of the earth and the use of geothermal energies, taking into account the natural pressure of geothermal waters throughout the world, the Republic of Uzbekistan.

Keywords: Geothermal energy, alternative energy, and renewable energy.

Geothermal energy - hundreds of millions of years is heat energy released from the earth during To the results of geophysical searches basically , the temperature in the core of the earth is 3000-6000 °C until is enough This temperature planet as it approaches the earth from its center slowly decreasing goes The eruption of thousands of volcanoes , the movement of blocks of the earth layer and Earthquakes are caused by the presence of high-energy energy deep in the Earth's crust evidence gives Scientists of the world The heat field of our planet is underground radioactive of the elements decay , as well as nuclear substances gravitational as a result of separation happened will be They think so .

estimated that the temperature at the bottom of the earth's crust at a depth of 10-15 km is 600-800 °C on the continents , and 600-800 °C in the oceans and 150-200 °C is expected .

Today's mankind until today geothermal using energy near the surface of the earth , that is , in active volcanic and seismic regions came These countries are USA , Italy, Iceland, Mexico, Japan, New Zealand, Russia, Philippine Islands , Hungary and They are Salvadorans Land in these areas boiling water with an internal temperature of up to 300°C or to the surface of the earth in the form of steam rises and In most cases, it comes out in the form of hot fountains (geysers). jumps out. These include Yellowstone Park , Kamchatka , and Iceland geysers enters .

Currently, geothermal energy is the real meaning with A rebirth is on the horizon in China . Country to public administration leader Xi Jinping arrival with updated . The city of Xianyang is ecological of energy in the world is the capital .

This field is on the path of dynamic development To the PRC to work proposed Icelandic State Engineers significant to the extent opportunity They are creating .

The world several leaders in the states again appearance future geothermal from energy being used Currently, scientific research in the field of geothermal energy is also underway in Uzbekistan. research take there is , there is from energy it's time to use it .

As a result of the research of the author's scientific researchers, with the assistance of the "Institute of Geology and Exploration of Oil and Gas Fields of the Republic of Uzbekistan", it was determined that the following geothermal resources exist in the Republic of Uzbekistan:

Hydrogeological data in the Bukhara-Khiva oil and gas region

o.	Square and mines	Well No.	Test range, m	Geothermal water Density , kg/l	Geothermal water pressure , 1/10 MPa	Temperature, ° C
.	Science	3	2987-3003	1.06	319.99	114
.	New Guzar	1	3192-3284	1,075	346.57	113
.	Chilgumbaz	1	3041-3035	1.04	583.15	113
.	Kamashi	8	3320-3312	1.07	571.92	124
.	New Karatepa	7	3572-3569	1.06	485.00	116
.	Mangit	3	3596-3590	1,065	471.30	121.5
.	West .A yzavot	1	3660-3550	1.06	351.62	120
.	Chatyrtepa	1	3523-3510	1,059	375.13	128
.	Jambulak	2	3760-3748	1.14	513.13	115
0.	Buzahur	3	3486-3478	1,065	389.16	126
1.	Kuruksay	2	3157-3340	1.06	459.73	110
2.	Mavlyankuduk	1	3522-3504	1,075	357.58	123
3.	Finally	1	3182-3166	1.07	576.12	116

next target identified is geothermal of the waters exists pressure with ascent is to determine the height . According to the physical properties of liquids , certain at a certain depth pressurized exists to some height when the liquid is dug up rises and like that to the top go stops at this the height of the liquid in the height to the bottom giving pressure underground geothermal of water to the pressure equal will be To the data in Yu snow mainly Uzbekistan Available in the territories of the Republic geothermal own when digging of waters pressure with rising we determine the height . At the bottom of the depth of the standing liquid giving pressure to the formula mainly defined. In this case, the rise of liquid height and $h = \frac{P}{\rho g}$ will be equal to.

Hence, the hydrothermal water present **in the Ilim mine**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{319.99 * \frac{1}{10}\ \text{MPa}}{1{,}06 \frac{\text{kg}}{\text{l}} * 9{,}8\ \text{m/sek}^2} = \frac{319.99 * 10^5\ \text{Pa}}{1060 \frac{\text{kg}}{\text{m}^3} * 9{,}8\ \text{m/sek}^2} = 3080\ \text{m rises to a height.}$$

Also hydrothermal water available in **Nov yy Guzar** mine

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{346{,}57 * \frac{1}{10}\ \text{MPa}}{1{,}075 \frac{\text{kg}}{\text{l}} * 9{,}8\ \text{m/sek}^2} = \frac{346{,}57 * 10^5\ \text{Pa}}{1075 \frac{\text{kg}}{\text{m}^3} * 9{,}8\ \text{m/sek}^2} = 3290\ \text{m;}$$

Hydrothermal water available in **the Chilgumbaz mine**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{583{,}15 * \frac{1}{10}\ \text{MPa}}{1{,}04 \frac{\text{kg}}{\text{l}} * 9{,}8\ \text{m/sek}^2} = \frac{583{,}15 * 10^5\ \text{Pa}}{1040 \frac{\text{kg}}{\text{m}^3} * 9{,}8\ \text{m/sek}^2} = 5722\ \text{m;}$$

Hydrothermal water found in **the Kamashi mine**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{571.92*\frac{1}{10}\,\text{MPa}}{1{,}07\frac{\text{kg}}{\text{l}}*9{,}8\ \text{m/sek}^2} = \frac{571{,}92*10^5\text{Pa}}{1070\frac{\text{kg}}{\text{m}^3}*9{,}8\ \text{m/sek}^2} = 5454\ \text{m};$$

Hydrothermal water available **at the New Karatepa deposit**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{485*\frac{1}{10}\,\text{MPa}}{1{,}06\frac{\text{kg}}{\text{l}}*9{,}8\ \text{m/sek}^2} = \frac{485*10^5\text{Pa}}{1060\frac{\text{kg}}{\text{m}^3}*9{,}8\ \text{m/sek}^2} = 4669\ \text{m};$$

Hydrothermal water found in **the Mangit mine**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{471.3*\frac{1}{10}\,\text{MPa}}{1{,}065\frac{\text{kg}}{\text{l}}*9{,}8\ \text{m/sek}^2} = \frac{471.3*10^5\text{Pa}}{1065\frac{\text{kg}}{\text{m}^3}*9{,}8\ \text{m/sek}^2} = 4516\ \text{m};$$

Hydrothermal water available **in Vost.A yzovot mine**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{351{,}62*\frac{1}{10}\,\text{MPa}}{1{,}06\frac{\text{kg}}{\text{l}}*9{,}8\ \text{m/sek}^2} = \frac{351{,}62*10^5\text{Pa}}{1060\frac{\text{kg}}{\text{m}^3}*9{,}8\ \text{m/sek}^2} = 3385\ \text{m};$$

Hydrothermal water found **in the Chatyrtepa mine**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{375{,}13*\frac{1}{10}\,\text{MPa}}{1{,}059\frac{\text{kg}}{\text{l}}*9{,}8\ \text{m/sek}^2} = \frac{375{,}13*10^5\text{Pa}}{1059\frac{\text{kg}}{\text{m}^3}*9{,}8\ \text{m/sek}^2} = 3615\ \text{m};$$

Hydrothermal water found **in Djambulak mine**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{513{,}13*\frac{1}{10}\,\text{MPa}}{1{,}14\frac{\text{kg}}{\text{l}}*9{,}8\ \text{m/sek}^2} = \frac{513{,}13*10^5\text{Pa}}{1140\frac{\text{kg}}{\text{m}^3}*9{,}8\ \text{m/sek}^2} = 4593\ \text{m};$$

Hydrothermal water available **in Buzakhur field**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{389{,}16*\frac{1}{10}\,\text{MPa}}{1{,}065\frac{\text{kg}}{\text{l}}*9{,}8\ \text{m/sek}^2} = \frac{389{,}16*10^5\text{Pa}}{1065\frac{\text{kg}}{\text{m}^3}*9{,}8\ \text{m/sek}^2} = 3729\ \text{m};$$

Hydrothermal water present **in the Kuruksay mine**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{459{,}73*\frac{1}{10}\,\text{MPa}}{1{,}06\frac{\text{kg}}{\text{l}}*9{,}8\ \text{m/sek}^2} = \frac{459{,}73*10^5\text{Pa}}{1060\frac{\text{kg}}{\text{m}^3}*9{,}8\ \text{m/sek}^2} = 4426\ \text{m};$$

Hydrothermal water available **in the Mavlyankuduk deposit**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{357{,}58*\frac{1}{10}\,\text{MPa}}{1{,}075\frac{\text{kg}}{\text{l}}*9{,}8\ \text{m/sek}^2} = \frac{357{,}58*10^5\text{Pa}}{1075\frac{\text{kg}}{\text{m}^3}*9{,}8\ \text{m/sek}^2} = 3394\ \text{m};$$

Hydrothermal water present **in the end mine**

$$\mathbf{h} = \frac{\mathbf{P}}{\boldsymbol{\rho g}} = \frac{576{,}12*\frac{1}{10}\,\text{MPa}}{1{,}07\frac{\text{kg}}{\text{l}}*9{,}8\ \text{m/sek}^2} = \frac{576{,}12*10^5\text{Pa}}{1070\frac{\text{kg}}{\text{m}^3}*9{,}8\ \text{m/sek}^2} = 5494\ \text{m};$$

Based on the above calculations, it can be concluded that:

Geothermal water, which can emerge from the Ilim deposit in the Bukhara-Khiva region of the Republic of Uzbekistan, rises to the surface under its own pressure and rises another 77 meters above the ground.

Also, geothermal water that can emerge from the Novy Guzar deposit will rise to the surface under its own pressure and rise another 6 meters above the surface, 2681 meters at the Chilgumbaz deposit, 2134 meters at the Kamashi deposit, 1097 meters at the Yangi Karatepa deposit, 920 meters at the Mangit deposit, 92 meters at the Chatyrtepa deposit, 833 meters at the Jambulak deposit, 243 meters at the Buzakhur deposit, 1086 meters at the Kuruksay deposit, and geothermal water that can emerge from the Okhir deposit will rise to the surface under its own pressure and rise another 2312 meters above the surface.

The geothermal water that could emerge from the East Aizovot field would stop under its own pressure before reaching 275 meters below the surface. Similarly, the geothermal

water that could emerge from the Mavlyankuduk field would stop under its own pressure before reaching 128 meters below the surface.

In conclusion, it can be said that in most of the considered deposits in the Republic of Uzbekistan, geothermal waters reach the surface of the earth under their own natural pressure without the use of water pumps, and using these waters as alternative energy for heating buildings, increasing the energy efficiency of buildings, creates an opportunity to save natural fuel reserves.

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