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UPGRADING GAS ASSAY IN DONBASS

A gas assay at secret service of coal deposits Donbass is a basic information generator about gas-bearingness of coals and containing breeds.

The gas-bearingness of coal layers in Donbass is studied mainly the selection of tests by core-gas collector. Most distribution was here got by core-gas collectors KA-61 and double column shells of DKS-76 IMR, equipped analogical on a construction gas collector.

However much authenticity and quality selection of gas tests these shells is at low level: a more than half of the selected gas tests is unrepresentative. One of main reasons of low representativity of gas tests is depressurization of gas collector and his insufficient capacity.

The purpose of this work is upgrading gas assay in Donbass due to the improvement of existent gas collectors , catching the natural gas selected from coal.

The Dnepropetrovsk separation of UkrGGRI is develop the new construction of sectional gas collector of SG-76P, intended for collection and maintainance of gas, selected from coal and containing breeds at the selection of coa-gas breed trials by the shells of type of DKS-76IMR.

Gas collector differs the presence of two consistently located gas-detection containers. Thus an overhead container is counted on surplus intrinsic pressure (to 8 kgs/sm^2) and supplied automatically a work float valve and reducing valve, limiting pressure of gas in a container to the safe size. A water-seal has a lower container and executed on principle of DKS-76IMR.

The construction of sectional gas collector of SG-76P is resulted in Figure 1.

Gas collector consists of corpus (1), in the overhead and lower ends of which the valves of pressurizing are set (2) and (3).

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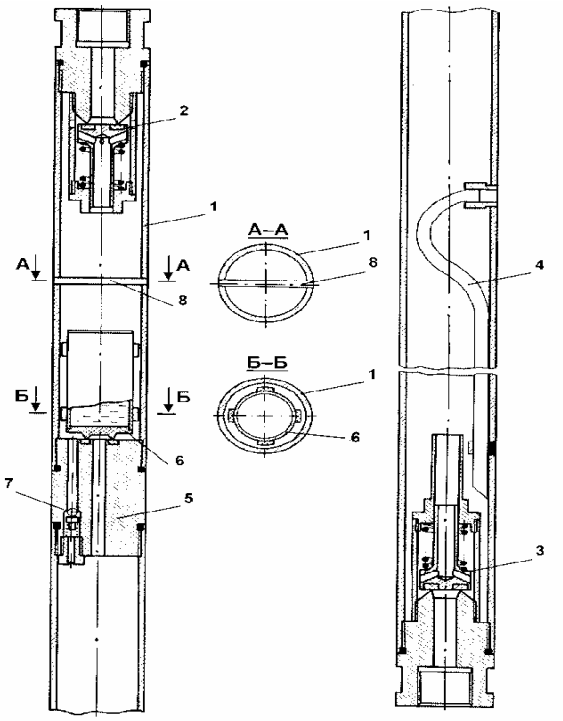

Fig. 1. The sectional gas collector SG-76P. 1 – corpus; 2 – upper valve; 3 – lower; 4 – a siphon tube; 5 – a valvular box; 6 – a float valve; 7 – a redusing valve; 8 – terminator

The corps of gas collector is separate a valvular box (5) on two sections:

1) with a bottom-poured hydrolock and overhead,
2) with a float valve.

In a lower section a siphon tube is soldered (4), one end of which is reported with the underbody of internal cavity of gas collector, and other end – with circular space between gas collector and outward pipe of gas collector.

In an overhead section between a valvular box (5) and by a valve (2) a float valve is placed (6). A float valve has a positive buoyancy and executed from a cylindrical hollow polyethylene corps, filled the incompressible liquid of relatively small closeness (for example by kerosene). A plug-forming element, which co-operates with a making more a compact element, placed in a valvular box, is executed in the underbody of corps of valve.

In a valvular box (5) a reduciruyuschiy (bypass) valve is placed (7), adjusted on maximal pressure of 8 kgs/sm^2.

Above a valve (6) into the corps of gas collector (1) a terminator is set (8), which limits moving of float valve at his axial getting up.

At the boring drilling as far as filling of overhead container of gas collector a float valve goes down gas under own weight downward and at his complete filling pressurizes a container. Then gassed going in a lower container.

At filling of container gas a liquid from him is ousted through a siphon tube (4), in which constantly there is a column of liquid, executing the role of water-seal.

At getting up of shell from a mining hole, as far as the decline of hydrostatical pressure of post of liquid, broadening in an overhead container gas is set on to the fight through a reducing valve in a lower container.

The construction of gas collector developed thus allows:

- without the increase of linear sizes of shell to increase the volume of the taken away gas test due to the concentration of it in a separate section and pressurizing its special valvular system;
- to provide safety of construction, limiting the closeness of filling of gas in a section due to a reducing valve;
- to promote the representativity of gas tests due to the smooth adjastable entering of close-settled gas lower section as far as getting up of instrument from a mining hole.

Technical description of developed gas collector of SG-76P is presented in a Table 1.

Table 1

Technical description of sectional gas collector of SG-76P

Name of indexes	Indexes on the types of gas collectors			
	Scheglovskaya GRE		Trudovskaya GRE	
	SG – 76P	serial	SG – 76P	serial
Volume of the boring drilling, m	2.0	5.05	5.8	7.95
Amount of the selected tests of gas	2	8	6	14
Got volume of gas test, sm3 for a sample	902	622	967	484
Middle maintenance of methane, %: – test, selected gazosbornikom – test, abstracted from core-recovery tube	 54.70 52.30	 17.78 42.00	 22.80 12.20	 8.03 23.06
Relation of maintenances of methane in the tests of gas collector and on a core, %	104.6	42.3	186.9	34.8

Experimental gas collectors tested in Scheglovskoy and Trudovskoy GRE at the selection of core-gas tests by the shell of DKS-76IMR from coals and gas-containing sandstones.

For the base of comparison the results of the boring drilling of GKN are accepted with serial gas collectors i sealbox.

The basic results of test of experimental gas collectors are presented in a Table 2.

Tests rotined that sectional gas collector is provided by the stable sampling of gases. Application of additional section with a float valve allows to increase the formatted capacity of gas collector in 2–5 times and avoid depressurization of gas collector by reason of the troop landing of hydrolock broadening at getting up of boring shell gas.

Middle volume got experimental gas collectors of gas tests there is more than at serial time in 1.5–2.0. The representativity of the got gas tests is considerably higher, than at ordi-

nary gas collectors, what more high as compared to a stippler maintenances of methane testify to, while at ordinary gas collectors they in 2.5–3.0 time below than maintenances of methane in core tests.

Table 2

Results of test of experimental gas collectors of SG-76P

Name of parameter	Norma
Outward diameter of corps, mm	57
Amount of sections	2
The general formatted capacity of sections is resulted to atmospheric pressure of gas, sm3, no less	3000
Working (surplus) pressure, kgs/sm^2: – for an overhead section, no more – for a lower section, no more	3000 8 0.03
General length of gas collector, mm	1080
Mass, kg, no more	9

CONCLUSIONS

The developed construction of sectional gas collector of SG-76P provides the selection of representative gas tests of greater volume with their more reliable pressurizing. Application of core-gas collectors with sectional gas collector will allow considerably to promote quality and authenticity of gas assay on the coal deposits of Ukraine.