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Methods and devices of radiation safety in the
circumpolar regions of Siberia

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For continuous monitoring the radiation situation in Russia to create a unified state automated radiation monitoring system (EGASKRO), which consists of a network of monitoring stations across the country. These positions, including installed in the settlements. Coordinate the establishment and development of EGASKRO involved Roshydromet. Forming regional monitoring system, the overall structure involved previously created territorial and sectoral radiation monitoring system.



The basis of automated radiation monitoring system (ARMS) are:

system power control posts dose of photon radiation, placed on the ground; a set of sensors that measure meteorological parameters, on indications which is determined by the condition of stability of the atmosphere;

process sensors for determining the emissions of radioactive impurities in the atmosphere;

software upper and lower levels.

Detection units

BDKG-22, BDKG-23



Gamma radiation detector	
BDKG-22	Geiger-Muller counter tube with energy compensating filter
BDKG-23	Two Geiger-Muller counter tubes with energy compensating filters
Energy range	60 keV ... 3 MeV
Measurement range of ambient gamma radiation dose rate [BDKG-22]	0.1 μ Sv/h ... 10 Sv/h
Measurement range of absorbed gamma radiation dose rate [BDKG-23]	0.1 μ Gy/h ... 100 Gy/h
Limit of dose rate measurement intrinsic relative error	$\pm 20\%$
Energy dependence relative to 662 keV (^{137}Cs)	-25% ... +35% (for energy range from 60 keV to 3 MeV)
Initialisation time	≤ 1 min
Continuous run time	24/7 operation
Burn-up life	≥ 100 Sv
Power supply	External DC power source, from 9 to 30 VDC
Protection class	IP67
Communication and data transfer to user hardware	RS 422 / RS 485
Operation temperature range	-40 ... +70°C
Relative humidity with air temperature $\leq 35^\circ\text{C}$ without condensation	$\leq 98\%$
Dimensions	$\varnothing 60 \times 255$ mm
Weight	1 kg



Advantages detection units are:

- rapid adaptation to changes in radiation levels;
- constant checking of;
- continuous round the clock work with preservation specifications within the standards;
- ability to work in harsh climatic conditions.

Location scheme of radiation monitoring



РАДИАЦИОННАЯ ОБСТАНОВКА (МЭД, МКР/ч)

П/П	Название	Последнее измерение	Среднее	Время максимума	Максимум
1	Лаборатория РЦ	15.07.2016 10:58	9	14.07.2016 22:35	10
2	село Атаманово	15.07.2016 11:54	8	15.07.2016 01:22	10
3	оздр. лагерь "Горный"	15.07.2016 11:04	13	15.07.2016 02:57	14
4	КПП-1	15.07.2016 11:11	12	15.07.2016 04:47	14
5	КПП-3	15.07.2016 11:15	10	15.07.2016 10:57	12
6	КПП-4	15.07.2016 12:36	13	15.07.2016 10:52	14
8	с. Сухобузимское	15.07.2016 11:18	12	15.07.2016 02:46	14
10	село Шивера	15.07.2016 11:18	12	15.07.2016 01:55	14
11	ЗДУ2 (г.Железногорск)	15.07.2016 11:24	14	14.07.2016 20:37	17
12	АТС-4 (г.Железногорск)	15.07.2016 11:35	11	15.07.2016 04:45	12

МЕТЕОУСЛОВИЯ (Ветер)

П/П	Название	Последнее измерение	Скорость	Направление
1	Лаборатория РЦ	15.07.2016 10:58	0.19	222
12	АТС-4 (г.Железногорск)	15.07.2016 00:20	0.19	42



Thank you for attention!