Tabelle 2

Die Kalk*ulation des planmäßigen Selbstkostepreises der Produktion*

Kostenstellen	Jahresausgaben	Stückkosten
	Summe, Taus. Rub.	Summe, Taus. Rub.
Materialausgaben	125 647,8	2,7
Arbeitslohn der Grundarbeiter	2 585,6	0,06
Kostenplan der Betriebsaugaben	4155,5	0,09
Kostenplan für Instandhaltung, Ausbeutung der Ausrüstung und der Transportmittel	891,7	0,019
Insgesamt	133 280,5	2,9

Preisbildung. Der Rentabilitätsfaktor wird als Verhältnis des Gewinns zu den Aktiven, Ressourcen oder Ströme, die ihn bilden, berechnet. Der höhere Rentabilitätsfaktor wurde als 14,2 %, Mehrwertsteuer = 18 %. angenommen.

Die Planung der technisch-ökonomischen Kennziffer der Anlagen für Synthese der Salzsäure ist in der Tabelle 3 vorgestellt.

Tabelle 3

Planung der technisch-*ökonomische*n Kennziffer

Technisch-ökonomische Kennziffer	Werte
Betriebsprogramm	9147,2
Umsatzvolumen, Taus. Rub.	238 123,5
Selbskostenpreis, Taus. Rub.	133 280,5
Grundfondswert, Taus. Rub.	5 963,9
Belegschaftszahl	31
Gewinn, Taus. Rub.	104 843
Fondsergiebigkeit	39,9
Fondsintensität	0,025
Fondsausstattung	966,1
Kapitalrentabilität	17,6
Betriebsrentabilität	0,75
Produktionsrentabilität	0,79
Rückflußdauer der Investitionen	0,06

Tabelle 4

Salzsäurepreise

Name des Betriebs	Preis für Tonne, Rub/Tonne
Die berechnete Bewertung der Salzsäure nach dem vorgelegten Plan	3988,5
OAG «Kaustik», (Kasachstan, Pawlodar)	6247,5 (курс 1.03.2014, 100 kzt = 19,6347 руб.)
OAG «Kaustik», (Russland, Wolgograd)	7 490,7
OAG «Kaustik», Russland, Rep. Baschkortostan	8 187,9
GmbH «Chimindustrie»	9000

Schlussfolgerungen: Die vorgeschlagene Neuerung lässt den Verlust von Synthesegas vermindern und das technologische Betriebsschema vereinfachen. Die Angaben in der Tabelle 4 bestätigen die Rentabilität der Salzsäure, ihre Wettbewerbsfähigkeit.

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DISPOSAL OF HAZARDOUS DRILLING WASTE

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One of the main sources of environmental pollution in the Russian Federation are the entities of oil-extracting and oil-processing industry. Pollution happens at all stages: in case of construction and operation of wells; to transportation and conversion of hydrocarbonic raw materials.

The oil and gas industry are potentially dangerous on environmental pollution and its separate objects. All engineering procedures under the corresponding conditions can break a natural ecological situation. Especially oil products, oil and drilling slimes render a bad influence. Oil slimes represent mixes which consist of oil products, mechanical impurity (clay, oxides of metals, sand) and waters. The water suspensions, which firm part consists of products of destruction of rocks and walls rift, products of abrasion drill pipe and casing, are drilling slimes.

Urgency of the problem is serious interest from geologists, ecologists, oil companies in the environmental and economic aspects. Theoretical and practical significance led to the choice of the theme of scientific work, its target orientation, structure of the study and the choice of methods for solution tasks.

The main purpose of work is development technology recycling of drilling waste, also offers complex methods of waste recycling for achievement of higher degree in ecological safety, because drilling waste from all waste of oil industry occupies the greatest volume on whole structure.

In recent years oil-producing enterprises various technological decisions directed on waste recycling of drilling take root into production. However, unified method of conversion drilling slimes for neutralization and utilization doesn't exist. All known technologies or methods of conversion can be shared into the following groups:

- the thermal - burning in open barns, furnaces of various types, receipt of a bituminous remaining balance;
- the physical - burial in special burial grounds, separation in a centrifugal field, vacuum filtering and filtering under pressure;
- the chemical - extracting substance with a liquid solvent, solidification with material (cement, liquid glass, clay) and organic (epoxy and polystyrene pitches, polyurethane), additives;
- the physical and chemical - use of specially picked up reagents changing physical and chemical properties, with the subsequent handling on the special equipment;
- the biological - microbiological decomposition in the soil in storage locations, biothermal decomposition [1].

In practice methods are combined with the purposes and real equipment of facility, so waste are utilized by various methods. The main task today, puts non-waste production. Using technology of the solidification, the received product can be used in production of building materials, mixing of the neutralized drilling slime in certain proportions with a special sorbent and cement. Toxic substances are removed due to linking sorbent and further cementation.

The system of collection applied now and storage of waste doesn't provide reliable protection of natural objects against pollution. Polluting components of drilling solutions and slimes have wide scale of chemical reagents applied in drilling practice, and also toxicant of breeds arriving from the drilling rocks and reservoir waters (readily soluble salts, ions of heavy metals, synthetic surface-active substances), accumulating in the soil, lead to decrease its biological activity and origin or strengthening of erosive processes. From one bush of rift are formed about two hundred cubic meter of drilling solution and slimes.

The handling of drilling slimes provides three options: burial in a sludge depot on sectional platforms; burning of drilling slime on installation of thermal neutralization; accumulating and withdrawal conversion drilling slimes in a sludge collector.

1. Burial in a sludge depot on sectional platforms

For collection and placement of drilling slime the construction of sludge depots in the territory of the sectional bases is provided. It allows quickly and near to utilize drilling waste providing burial of products in case of destruction rocks and well walls. During operation the minimum transport costs are provided, but after works, recovery of lands need to be done by soil to level of a surface of a platform with next recultivation.

2. Burning of drilling slime on installation of thermal neutralization

For this purpose, the module is offered centrifugation cuttings ICBD - it is designed for dewatering sludge drilling muds when using oil-based by using centrifugal force. Pictorial diagram of this process is to obtain a slurry, its drainage and encapsulation, transportation to disposal sites.

For this purpose the MTCBR module of centrifugation of boring slime is offered, it is intended for dehydration drilling slimes, if we use drilling solutions on an oil basis, on account of centrifugal force. The sequence of this process is:

- firstly, get slime,
- secondly, drainage and encapsulation,
- thirdly transportation to an utilization place.

3. Accumulating and withdrawal conversion drilling slimes in a sludge collector

The construction of sludge collector is made for centralized collection, accumulating and neutralization of drilling slime. After system of cleaning waste of drilling is exported by means of dump trucks from bushes on specially equipped sludge collector.

Today the developing direction is using of biological preparations. Now in this direction researches are conducted and approved at different oil-extracting and processing entities. The principle of action of biological preparations is based on using hydrocarbon microorganisms and additives with mineral complexes, and also oxidized biosorbents. Non-waste production in this direction is provided due to use received products in agricultural industry, and as fertilizers.

Fertilizers are getting by using microorganisms destructors, providing favorable conditions of the environment (temperature, mineralization, pH, mineral supply) successfully picked up culture or mix of strains are capable to utilize in short time oil pollution in organic fertilizer [2].

When drilling offshore, there are also problems with the ecological safety of the environment, and therefore the possibility of disposal drilling waste.

Offshore drilling is carried out with a stationary hydraulic structures and floating drilling rigs. By stationary hydraulic structures include trestle platforms, dams, artificial islands and fixed ground platforms installed at great depths.

Machinery and technology of drilling wells with subsea location have some differences from the techniques and technology of drilling on land. In this type of work is especially important to follow the safety and consistency of the drilling process.

In any branch of production in oil extraction or in drilling is not uncommon of emergencies related to bottling hydrocarbons. Available figures on the number of oil spills in Russia don't exist , and is estimated by Greenpeace often spills occur due to damage to pipelines gust towards destruction and property damage . For comparison, in a year in the USA is about leaks 14,900 tons, 17,600 tons in Russia, 7700 tons in Canada. When pipelines is broken up and other situations, effective way in this situation of collecting hydrocarbons is using biosorbents. This direction is the subject of further researching.

Thus, in article were considered methods of utilization of drilling waste, their types, possible prospects of their further using, existing problems on land and on a sea shelf due to drilling, and also there are the direction of further researches is provided.

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EXPERIMENTAL MODELING OF THE FLOW OF OIL-WATER EMULSION WITH POLYMERS ADDITIVES

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Upon dissolution of the polymer occurs in the liquid and a simultaneous increase in the viscosity rate and increase of the turbulent flow of the polymer solution in comparison with the flow rate of the source of low-viscosity solvent. This paradoxical phenomenon is called the Toms effect and is widely used in oil transportation by pipelines. When Toms effect occurs (Fig. 1)it leads to a reduction in the hydrodynamic drag reduction coefficient (λ), entering the equation Darcy-Weisbach (1):

$$\Delta P = \lambda \cdot \frac{\rho \cdot L}{4 \cdot \pi^2 \cdot R_w^5} \cdot Q^2 \qquad (1)$$

Decreased λ is accompanied by either increasing the volume flow rate (Q) at a constant predetermined pressure drop ∆ P = const, or by decreasing the pressure loss (∆ P) friction at a constant flow rate Q = const.

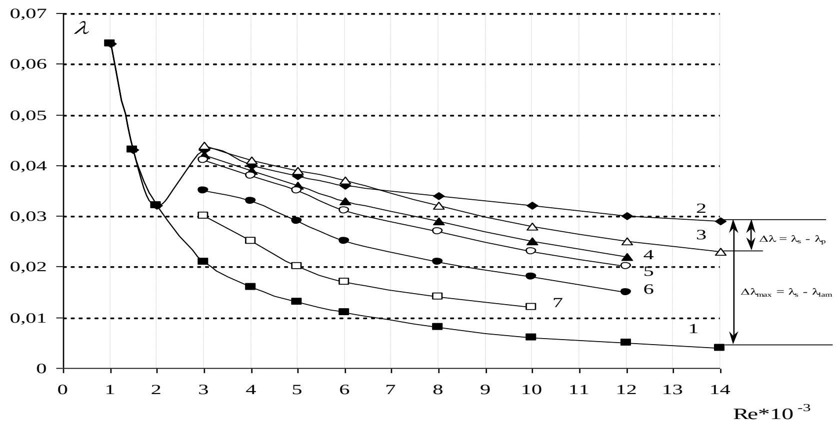

Fig. 1 Dependence of the hydrodynamic resistance with the Reynolds number for different polymer solvent system [1]: 1)Poiseuille theoretical curve for laminar flow *λлам* = 64/Re;
2) Blasius empirical curve for turbulent flow *λтур*=0,3164/Re0,25;
3) Polyisoprene dissolved in toluene solution (*C* = 0,05 *кг/м*3; Mr = 0,5·106);
4) Polyisoprene dissolved in toluene solution (*C* = 0,1 *кг/м*3; Mr = 0,5·106);
5) Polybutadiene dissolved in toluene solution (*C*= 0,1 *кг/м*3; Mr = 0,6·106);
6) Polybutadiene dissolved in toluene solution (*C* = 0,1 *кг/м*3; Mr= 1,2·106);
7) Polyisoprene dissolved in oil (*C* = 0,1*кг/м*3; Mr = 0,5·106).