

Technological Task 24	Study of conditions for the formation of salt deposits on the inner walls of production pipelines at the field and methods to combat their formation.
Essence of the Problem:	<p>The peculiarities of the composition of the extracted oil and technological processes of extraction, transportation, and preparation of oil lead to the formation of deposits on the walls of production and field pipelines, internal surfaces of heat pipes, and in the form of deposits on the walls of vessels and bottom sediments. These deposits reduce the conditional throughput of the pipeline, thereby reducing equipment productivity and altering the parameters of the technological process, reducing the productivity and inter-repair period of dynamic equipment and associated oil heaters, decreasing the inter-repair period of tank equipment, and increasing the negative impact on the environment. The cumulative negative impact of salt deposits strongly negatively affects the economic performance of the field. This work aims to determine the causes of deposit formation and develop methods to prevent (reduce) deposit formation and allow for the cleaning of equipment with subsequent waste disposal.</p>
Required Technological Parameters:	<ol style="list-style-type: none"> 1. General characterization of the production facility, study of technological regulations and features of technological cycles, collection of data from HAL on the composition of oil and water at all stages of technological operations. 2. Laboratory studies on the formation of deposits during the modeling of parameters for formation and deposition. 3. Collection and analysis of field information on the intensity of deposit formation on surface oilfield equipment, taking samples of deposits, and determining possible causes of deposit localization with modeling of individual technological units and assemblies. 4. Analysis of the effectiveness of applied chemical reagents (for protection and combat of deposits in complicated areas). 5. Analysis of the effectiveness of chemicalization points and technologies (reagent dosing). 6. Analysis of emerging "conflicts" of chemical reagents with residual quantities of reagents from other technological operations (including GTM). 7. Laboratory studies of the effectiveness of basic chemical reagents (types of water - barites, calcites). 8. Technological objects for protection against deposits and monitoring. 9. Sampling of co-produced water and studying the physicochemical properties and composition of field water from wells arriving at ZU (HCO_3^-, CO_3^{2-}, SO_4^{2-}, Cl^-, Ca^{2+}, Mg^{2+}, $\text{Na}+\text{K}^+$, Ba^{2+}) not more than 500 samples. 10. Conducting laboratory studies on the composition of deposits at various stages of the technological process. 11. Analysis, processing of obtained results, and predictive calculation of mineral deposit formation when mixing co-produced water arriving at AGZU. 12. Formation of a deposit map with indication of problem areas. 13. Providing recommendations on reagent dosages for effective protection against deposit formation.

	<p>14. Compilation of a scientific report.</p> <p>15. Development of a feasibility study for the use of inhibitor reagents and solvents and chemicalization technology.</p> <p>16. Providing the Customer with an approved report "Monitoring the use of inhibitor reagent against deposits at the fields of PU" and providing recipes for the most effective inhibitors and solvents.</p>
Requirements for Organization and Execution:	<ol style="list-style-type: none"> 1. For collecting information and studying operational documentation, the Executor travels to the locations of the object. 2. The entire volume of technical inspection services is provided by the Executor at its own expense, including accommodation and meals. 3. The Executor must have an accredited or certified laboratory (own or rented, or a service agreement). Supporting documents are an accreditation certificate or a measurement condition assessment certificate, or a service agreement. 4. If necessary, the Customer provides access to the Executor to production units and allows the Executor to collect necessary technical data in accordance with the requirements.
Scale of the Problem	Formation of stable deposits in pipelines and heat pipe coils of oil heaters, reduction of the inter-repair period of dynamic equipment due to the formation of deposits, formation of bottom residues in tank equipment.
Existing Methods for Solving the Problem:	Protection is carried out by chemical methods using the injection of salt deposition inhibitors.
Contact Person: Full name, position, phone, email.	
Expert Notes:	