

## Low Temperature Methods in the Construction of Platforms for the Extraction, Transportation and Protection from Emissions of Liquid Hydrocarbons

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The construction of platforms in the production of liquid hydrocarbons is currently being made mainly through the use of technology, reinforced concrete. After a period of operation of the platform, the utilization of facilities requires a cost comparable to the cost of construction of the platform. The production version platforms made of metal or a combination of both methods is practically little effect on the reduction of costs for the disposal of platforms – island operating offshore pools.

In the early 90-ies at the Department of low temperatures was proposed the draft of the ice platform, which can easily be disposed of. Studying the processes of formation of water ice in different conditions, our research group showed the ability to create ice platforms of oil production on the shelf. The construction of a platform made of ice reduce tthe duration time of work by 5 – 7 times. The ice strength in compression is rather high and reaches 3 to 5 MPa. Maintaining the ice in a solid state during operation of the platform may be through the work of the refrigeration unit, the power consumption of it will depend on the geographical location of the facility. To ensure adequate bearing capacity, the average temperature of the ice needs to be at -8°C and below.

To determine the growth rate of the ice layer thickness with time working equation was proposed.

Another task, the importance of which is determined by is the preservation of the environment through protection of the water basin from the release of oil during its production or transportation. We propose to use cryogenic liquids for example nitrogen, which should be stored in tanks on the sea platforms producing of hydrocarbons and on the vessels transporting it. The different patterns of the use of cryoproducts to suppress the release of crude oil is considered. The proposed equation for calculation of the dynamics of freezing of water ice on the outer surfaces of the flat walls and surfaces of pipes is proposed – including the one which take into account the temperature dependence of the thermal conductivity coefficient of the ice. The availability of liquid nitrogen allows to successfully use it to extinguish fires.

### Biography:

Marinyuk Boris Timopheevich was born in Moscow in 1947. Now a lecturer of the department of Low Temperature named by P.L. Kapitza of Moscow State Polytech University, author of a few books and near 100 articles. Now prof. Marinyuk B.T. is a member of commission B1 Int. Institute of Refrigeration (Paris)