

## GENERAL DESIGN ASPECTS

The development of conceptual model was based on economical model that reflected the structure, characteristics and conditions for development and operation of the main development facilities including the transport-technological system and basic risks.

The performed research has enabled to:

- ✓ Review more than 100 design solutions;
- ✓ Define efficient solutions enabling to ensure profitable field development;
- ✓ Develop the model for field development;
- ✓ Develop preliminary technical specifications for all structures under development;
- ✓ Justify the concept of production transport & technological system;
- ✓ Provide financial and economic justification for expediency of the field development;
- ✓ Develop an integrated plan of further activities.

#### EXPERIMENTAL AND THEORETICAL JUSTIFICATION OF DESIGN SOLUTIONS FOR THE OFFSHORE FIXED ICE-RESISTANT SHIPPING TERMINAL

The task to justify design solutions for Varandey oil terminal has required to:

- ▶ Perform experimental research for fixed ice-resistant offshore offloading terminal parameters;
- ▶ Obtain the data to justify design solutions aimed at provision of reliability and safe operation of fixed ice-resistant offshore shipping terminal under combined effect of waves, current and drift ice.

The obtained results include:

- ✓ comparison tests for two options of fixed ice-resistant offshore shipping terminals (with slope and vertical faces) under combined effect of waves and current, in hummock and floe ice resulted in the selection of option that has the least level of total global load from these effects;
- ✓ experimental investigation for kinematic parameters of the tanker connected to the terminal by the mooring line (terminal - tanker system);
- ✓ identification of forces for the mooring line;
- ✓ determination of maximum seaways and ice conditions when the safe oil offloading is still possible (based on conditions of tanker station-keeping near the terminal).



Model tests of a fixed ice-resistant offshore shipping terminal and a tanker in the sea-keeping and ice model tanks

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