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# Zhatay Fleet Operations Base: a Comprehensive Development Project and its Socioeconomic Significance for the Arctic Regions of the Republic of Sakha (Yakutia)

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**Abstract.** Development of transport infrastructure in the Lena River Basin is crucial to the continuous delivery of vital cargo to the dwellers of the Republic's Arctic regions, to investment projects, to Emercom's and Defense Ministry's bases. Today, the National Arctic Development Program plans an investment project titled *Fleet Upgrade and Shipbuilding for Inland Transportation of Cargo in the Lena River Basin*; the project will use the Zhatay Shipyard reconstructed at the Zhatay Fleet Operations Base (ZFOB), which is a structural multifaceted technical management unit of OAO Lena United River Shipping Company (LORP). This is a comprehensive large-scale projects that will require its participants to be well-coordinated. Inauguration of the high-tech Zhatay Shipyard at the reconstructed and retrofitted Zhatay FOB will enable the constructing and upgrading passenger and cargo ships; the shipyard will also be able to assemble river-marine vessels from the kits produced by the shipbuilders of AO United Shipbuilding Corporation or by other Russian shipbuilders under cooperation agreements. The project is expected to create about 1,300 jobs. It is estimated to cost 5.75 billion rubles, 4.1 billion of which will be invested by the federal budget.

## 1. Zhatay fleet operations base

ZFOB comprises the Fleet Maintenance Unit (FMU), a self-repair shop, a convoy shop, and a life-saving equipment testing station. The base focuses on ship repair and shipbuilding. It provides a wide range of ship and onboard equipment maintenance services as well as some non-core services.

ZFOB uses every opportunity the Yakutsk Transport Hub provides and has the necessary facilities, which, however, are outdated. The company has two 600-ton ship-lifting docks and Yakutia's only 1,600-ton slipway that was reconstructed in 2005. The company continues upgrading its facilities. Recently, they have purchased and commissioned a plasma metal cutter. The slipway has been equipped with a sandblasting and hull painting facility.

From 2014 to 2017, the company's heat and oxygen production rates remained stable. Fleet repair and maintenance (slipping) showed an upward trend and rose by 21% by 2017. In 2017, the HQ-ordered repairs dropped by 25% in value against 2014.

One important factor that currently affects the company is the Clause 108 of *Technical Regulations on the Safety of Inland Water Transport Facilities*; effective since January 1, 2018, the clause requires that oil tankers be double-bottomed and double-boarded [1]. 115 ships aged 41 years on average now need to be upgraded to have double bottoms and double boards. Given its existing resource base, LORP is not even capable of such upgrade effort. The equipment in shops dates back to the 1950s–



1970s, some of the machines haling from 1945. The production equipment is aged 65 years on average and is worn-out to 95%. At the same time, LORP's depreciation figures show a downward trend. Thus, they dropped by 26% in 2016 YoY [6].

**Table 1.** ZFOB performance indicators in 2014–2017.

| Products                       | units                   | 2014    | 2015    | 2016    | 2017    |
|--------------------------------|-------------------------|---------|---------|---------|---------|
| Heat                           | thousand GCal           | 11.646  | 11.646  | 11.646  | 10.960  |
| Oxygen                         | thousand m <sup>3</sup> | 114.118 | 0       | 105.062 | 102.777 |
| Ship repairs for third parties | thousand human hours    | 0       | 0       | 1.437   | 14.932  |
| Ship repairs for LORP          | thousand human hours    | 259.989 | 237.129 | 251.295 | 210.623 |
| Slipping                       | thousand human hours    | 34.865  | 35.166  | 38.918  | 42.275  |

### 1.1. Comprehensive project for the development of Zhatay fleet operations base

Development of transport infrastructure in the Lena River basin per the *State Program for the Socioeconomic Development of the Arctic Zone in the Russian Federation* [2] implies establishing eight Arctic stronghold areas. In the Republic of Sakha (Yakutia), one such areas is the North Yakut Stronghold, which will comprise not only the Arctic regions of Yakutia, but also the Lena riverbed as well as the city of Yakutsk together with the emerging Yakutsk Transport Hub.

The North Yakut Stronghold is intended to overcome the hindrances of developing human settlement and industrial facilities: remoteness and low accessibility as well as complicated logistics, where inland water transport is the only mode of transport, at least for cargo.

The *State Program for the Socioeconomic Development of the Arctic Zone in the Russian Federation* sets forth a comprehensive project titled *Fleet Upgrade and Shipbuilding for Inland Transportation of Cargo in the Lena River Basin. Reconstruction and Upgrade of the Zhatay Shipyard* (the Comprehensive Project) [4].

Russia's Ministry of Economic Development, Ministry of Industry and Trade have agreed with the Government of the Republic of Sakha (Yakutia) that constructing the high-tech Zhatay Shipyard is a high-priority project that will systematically affect the North Yakut Stronghold and enable multiple other stronghold-based investment projects in construction and operation. Building state-of-the-art river fleet at the newly constructed high-tech Zhatay Shipyard will boost the inland water transport and shorten the navigation while increasing the amount of transportable cargo to better sustain investment projects.

The **Comprehensive Project seeks** to renew and update the bulk cargo and oil fleet operating in the Lena River Basin, to facilitate the strategic objectives of Northern Shipments (Rus: Северный завоз, the delivery of vital cargo to the remote locations in the Russian North — translator's note), to boost the development of Siberian and Far Eastern territories.

To that end, it is necessary to accomplish the objectives below:

- inaugurate a state-of-the-art, high-tech shipyard in Zhatay;
- construct riverboats;

- upgrade, repair, and provide inter-navigation maintenance for, ships;
- dispose of decommissioned ships.

The Comprehensive Project is phased as follows:

Phase 1 (2017 to 2019): draft the ship designs and lay the keel of the flagship;

Phase 2 (2020 to 2021): raise the shipbuilding figures;

Phase 3 (2022 onwards): reach the design capacity (10 ships of different classes per year) and implement a customer-oriented approach in cooperation with Russia's shipbuilding and mechanical engineering companies.

Capital investment in the program to construct 160 ships by 2036 is projected to total 36,312.1 million rubles in 2019 prices, or 71,563.2 rubles in prices adjusted for inflation in the 2016-2055 planning horizon.

Below is the projected funding breakdown:

(a) 6,183.6 million rubles in loans from AO Far East and Baikal Region Development Fund to construct riverboats, granted at 5% interest rate over 10 years with 2 grace years; 6 tranches over 2019-2036 with a last tranche in 2038. This will inflate to 12,186.6 million rubles as projected for the 2016-2055 planning horizon;

(b) 16,807 million rubles in equity (33,123 million rubles adjusted for inflation);

(c) partner's investment: 12,367.3 million rubles of investment in shipbuilding (24,373.2 million rubles adjusted for inflation);

(d) budgeting: 954.2 million rubles to recycle the ships (1,880.5 million rubles adjusted for inflation).

Targets:

- lay the keel of the flagship at the high-tech Zhatay Shipyard (currently under construction) in 2019;

- reach the design capacity of building 10 riverboats per annum as soon as in 2020;

- reach the design capacity of repairs and inter-navigation fleet maintenance of 432.3 thousand normative hours per annum;

- reach the design capacity of ship upgrades, 6 ships per annum;

- reach the design capacity of ship disposal and recycling, i.e. dispose of 2 decommissioned ships per annum;

- create more than 300 new jobs at the under-construction Zhatay Shipyard, 80% of which must be high-tech jobs.

**Table 2.** Breakdown of investment in the Comprehensive Project to open a shipyard and upgrade the ship repair facilities.

| Project funding breakdown  | Million rubles in current prices | Per-centage | Million rubles adjusted for inflation | Per-centage |
|--|----------------------------------|-------------|---------------------------------------|-------------|
| Federal budget subsidies under the State Program for the Socioeconomic Development of the Arctic Zone in the Russian Federation for Until 2020 | 4,106.2                          | 71.4        | 4,106.2                               | 60.0        |
| Funds of AO Sakha Republic Development Corporation from the Republic of Sakha's (Yakutia) regional budget                                      | 270.0                            | 4.7         | 281.7                                 | 4.1         |
| Funds of OAO Lena United River Shipping Company  | 1,374.5                          | 23.9        | 2,451.1                               | 35.9        |
| Total  | 5,750.7                          | 100.0       | 6,839.0                               | 100.0       |

All in all, the project is expected to produce 160 riverboats by 2036 [4].

The Comprehensive Project proposes a special action plan under the State Program for the Socio-economic Development of the Arctic Zone in the Russian Federation for Until 2020 and Onwards; the plan is to establish the high-tech Zhatay Shipyard with a total funding of 5,750.7 million rubles, of which 4,106 million rubles will come from the federal budget: 2,000.0 million in 2018, 1,500.0 million in 2019, and 606.2 million in 2020 [2].

The shipyard's costs of building new ships will total 31,005.4 million rubles in current prices (53,160.9 million rubles adjusted for inflation) over 2019-2036. The ships will mainly be commissioned by OAO LORP and built to order as set forth in the adopted production program. Each ship will constitute an investment project in its own right. Beside LORP's orders, the Shipyard will accept third-party orders for up to two riverboats per annum.

New shipbuilding will be funded as follows:

1. Ships ordered by and for LORP, which will be operated under a regional concession agreement for 15 years:

- 50% of funds will be provided by the Far East and Baikal Region Development Fund;
- 50% will be raised from other sources.

2. Ships ordered by and for third parties, Lena River Basin's shipping companies, for sale:

— 27.6% of the ship's total end user-born average cost will be provided from the budget under the existing governmental support procedures;

- 72.4% of the costs will be covered by the buyer.

Several versions of the Comprehensive Project have been analyzed while drafting it. Analysis of all the scenarios showed the most effective option would be to include LORP's land plots located within the Zhatay Urban District in the Kangalassy Priority Development Area (PDA); to establish a shipyard; to do shipbuilding in cooperation with Russia's other shipbuilders and the Republic of Sakha's mechanical engineering companies.

The Project will help renew and update the fleet, make inland cargo transport in the Lena River Basin safer, and create some 1,300 new jobs (the Zhatay Shipyard is projected to employ 680 to 690 persons, with another 600+ jobs being created at other companies in the Republic through cooperation), of which more than a thousand will be high-tech jobs. Besides, the Project will return 28,267.0 million rubles in taxes over the 40-year horizon planning period.

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