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**RESTRUCTURING AND REVITALIZING THE KALININGRAD REGION*
(PHASE I-A)**

TF/RUS/94/001 and US/RUS/93/134

RUSSIAN FEDERATION

Technical report: Study on shipbuilding industry and repair of ships**

Prepared for the Kaliningrad Administration
by the United Nations Industrial Development Organization

*Based on the work of S. Dabski,
consultant in shipbuilding and repair, and
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x MARINE
Engineering
Service

x JANAR
shipyard

x PREGOL
shiprepairingyard

KALININGRAD

ANMERKUNG:

1. Die früheren deutschen Straßennamen auf dem Stadtplan sind im Kleindruck. (Farbdruck)
2. Die Objekte, die auf dem Plan nicht bezeichnet sind, sind in der Tabelle mit Punkten bezeichnet.

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CONCLUSIONS AND RECOMENDATIONS:

Several conclusions and recomendations can be reached from the overview of the shipbuilding and shiprepair industry.

1. Main shipyards facilities as floating docks, slip ways, synchrolift, length of pires which decide about production capacity both shipbuilding and shiprepairyards are very attractive for the potential local or foreign customers.
2. From the preliminary interview with some Polish shipyards it results that they are seriously interested in entering into relations with the shipyards of Kaliningrad region to place here orders for shiprepairing services.
The letters of intend in this scope will be presented by Polish shipyards soon.
3. As in other post socialist countries, restructuring decision must be the carrier of change.
The framework of shipbuilding and shiprepairing industry it is great need of a prompt change in order to survive without subsidies for the time being.
4. Inefficiencies of ilexibility and mobility, deficits of hard currency, low profitability, deteriorating position on the sale market and lack of motivation to change are some of the problems which require rapid solutions.
5. Privatization in itself is not the immediate solution to all problems of shipbuilding and shiprepairing industry. It is counted upon to bring better financial and technical management, and it permits those enterprises which are efficient and viable to be saved.

6. A combination of financial instruments must be employed to support shipbuilding and shiprepairing industry. This may include selling, leasing or hiring out part of property as hulls, estates, production divisions, obtaining foreign investment capital.
7. SWOT analysis made in this draft identify strengths and weaknesses of the sector and suggest strategies to improve the situation.
8. Computerizing of the managerial and technological-production organization of the shipyard will facilitate effectiveness of managing work ordering of materials, specify all necessary prices, check own stock, establish quickly profit and loss Prognosis. Planning, account model, time registration, financial reports etc. also will be programmed.
9. Building of hulls equipped with basic components. Steel plates are already processed and built in a hull and sold at satisfactory price. But to be competitive on the market shipyards should fulfill customer requirements as to the quality of the works and punctuality of the order.
10. The Russian merchant fleet capacity is too large and some savings could be made by reducing the number of ships. This can be done by scrapping of some of oldest ships. Organization of such scrapping stands may be made at the shipyards and to earn the money to export steel scrap, for which is great demand.

11. Support of national shipbuilding industry is different in particular countries.
In richer countries of more developed capital market the wider range of government aids is noted. West countries are at the top of direct and indirect support to shipbuilding industry.
At least some subsidies for Kaliningrad shipyards must be provided.
12. Programme of training and introduction of company management methods to ensure efficiency of operation and high and uniform quality of products should be undertaken.
13. Measures to be taken to ensure reliability of ships equipments and steel plates supply from the domestic ancillary manufacturers at good quality and competitive prices.
14. The initiatives should be put forward by shipbuilding, machinery, military complex in virtue of common interest and advantage.
This would create a new form of organization (holding) in order to take advantage of fixed assets, employment, stock and reserves, current accomplishment of concluded contract and liabilities.
In a scope of holding it would be easier to include to the cooperation banks to get credits and banks guarantee for the vessels and production for machinery industry.
15. Quality Managerial System JSO 9001 should be implemented, as most of the world shipyards have already obtained it or they are in the course of introducing.

THE MISSION

All findings, statistics, publications used in the conduct of this Report were obtained during consultant mission in Kaliningrad, meetings and interviews with Shipbuildingyards and Shiprepairingyards Management.

During the briefing with Mr. Rudolf H. Mueller - Senior Industrial Development Officer from UNIDO and Mr. Sven Mauléon - Team Leader it was agreed that the consultant will concentrate on problems identifying shipbuilding and ship-repair industry.

Split mission was continued 32 days from 11.06.95. till 15.09.95. (with breaks).

I wish to acknowledge and extend my full appreciation to those of the Kaliningrad Regional Administration, management and staff of shipbuilding and shiprepairing yards for their excellent cooperation and assistance in providing of vital information and inspection tours necessary to complete this Report.

My sincere gratitude is also extended to those many personages from Kaliningrad Technical Institute and Kaliningrad International Business School who contributed their time, knowledge and personal experiences to this Report.

OBJECTIVES

The objectives of the Report were to be:

1. Identify the opportunities and constraints for the the shipbuilding and shiprepair industry in Kaliningrad.
2. Propose strategies to be adopted to strengthen the shipbuilding and shiprepair industry.
3. Identify viable investment and development projects based on the above strategies.

PROJECT BACKGROUND AND JUSTIFICATION

History

Region of Kaliningrad /territory: 15100 sq.km ,population 910.000 inhabitants/,borders with Poland,Lithuania and Baltic Sea.

The city of Kaliningrad /population 500.000 inhabitants/ dates to 12 th century when it was founded by the Teutonic Knights /Grand Master Heinrich von Hohenlohe / and known as Koenigsberg. By the 16th century it was one of the Hanseatic trading cities exporting timber, grain and hemp to other countires in Europe.

After second world war the city and region were named Kaliningrad and incorporated to the Russian Federation. Population of the region is 0,6 % of Russian Federation and of the same percentage is contribution to the whole industry and agriculture.

The transport is well developped,specially sea transport, which reaches yearly around 4 mln tons of commodities in import and export.

Sea and ocean sciences are at the world level and the number of research institutions in the region total 34. The system of education consists of three civil higher schools / 1200 students/one of them it is university /5000 students/.

Trends.

At the begining of 1°91 source of materials became worse and reached critical situation for all branches of the economy,specially in building,machines, ships and shiprepairing industries.

Paper-cellulose industry has noted only small recession thanks to high USD exchange rate ,which made export pro-

fitable.

With the purpose however to restrain the negative tendency it has been apportioned in 1993-94 from Russian Federation budgeted considerable amount. The measure was to support the traditional economic possibilities of the region in the time of the restructure. Planned delivery of the means from Federal sources as government subsidy and credit amounted to 60 milliands Rbls.

Flow of foreign funds in investment form did not expand in these domains where it was expected after Free Economic Zone establishment (0,5 mln USD in 1993).

The reason of such "state of affairs" is high inflation, what makes practically impossible to guarantee longterm investment credit and attract both own and foreign capital. Though in this case were positive examples of practical application of new technology in shiprepairing construction and cellulose industries. In particular it comes to the front cooperation with Poland, Bialorus and Lithuania, especially with Elblag and Gdansk voivodeships in the range of ship-repair, shipbuilding and machine industries.

Future

The privileges of the Free Economic Zone given in December, 1993 for 10 years were abolished by a President Decree in March, 1995. The reestablishment of the privileges for the region was lately in the first reading by state Duma /after season's break/, there will be second and third voting. If they will be voted through they give the opportunity for:

- frontier tax limitation to 20 %,
- special tax /3 %/ and duty on consumption abolishing,
- new enterprises will be exempted from the tax during 2 years
- administration of region will have the right to conclude international contracts.

PROJECT CONCEPT FOR YANTAR SHIPYARD.

For the short term the steps should be taken to implement the following building programme:

Fish farmers from the Kaliningrad region are going to build series of small fishing boats at the range of 30 t. deadweight each and in the number of 80 - 90 units.

Yantar shipyard is ready to build such boats in the number of 30 units per year and at the price around 80.000 USD per unit.

The whole contract should be worth 6,5 mln USD -
- 7,2 mln USD.

The new project for production of containers provide to be built 20.000 sea containers, 60.000 pieces of sheet rolling and 5000 parts for containers per year. Total production value is estimated on 3-5 mln USD in the first 2-3 years period.

Ministry of Transportation from Moscow has a project relating to the urgent building programme of at least 11 tankers- ice - breakers which will replace this type of vessels taken over by Latvia after a break-up of former Soviet Union.

Contract for these units is worth around 250 million USD.

The displacement of the tankers will be from 2500 t -
- 24.000 tons which corresponds to the production profile of the Yantar Shipyard .

It might be taken by the shipyard at least $1/3 - 1/2$ of the whole building project what means 3 - 5 vessels at the total amount around 66 - 88 million USD, which could be built in 2-3 years period.

For the long period term there is building programme for 44 units of this type totaling 900 million USD.

Russian shipowner "Baltic Shipping Co." from Kaliningrad is going to build timber carriers having 2600 DWT each in number of 4 units.

The main vessels dimensions are:

$l \times b \times t = 86,6 \times 12,8 \times 3,0$ m at speed = 12 knots.

The price of the vessel is around 4 - 4,5 million USD.

The whole contract could be realized during 2-3 years period and it would give shipyard around 3 - 5 million USD per year.

As shipyard has good experience in building of aluminium different constructions (like cutter hulls for the German firm "Fassmer") it could be considered to start construction accommodation - ladders.

These devices which average price is 30.000 - 60.000 USD per unit could be sold at the beginning for internal market, which is estimated for more than 100 units per year.

Assuming that $1/4 - 1/3$ of this demand will be taken by the shipyard it makes yearly worth capacity about 900.000,- USD - 1.350.000,- USD.

PROJECT CONCEPT for MARINE ENGINEERING SERVICE.

For the short term shipyard could develop its production of pannels made of natural wooden strips and joined with glue.

As these pannels may be used for production of different furniture and are destined to equip vessels superstructures it would be a good opportunity to direct part of them for export. It needs of course some marketing especially in the shipbuilding countries like Lithuania , Ukraina, Poland, Romania, Chroatia.

As the competitive prices for these pannels amounts around USD 16,- per sq.m it would increase the yearly global revenue of the shipyards from 10 % to 20 % or even up to 30 %.

The next short term undertaking could be creation of the flying brigades consisting of 12 - 15 people and employing the following technicians and engineers:

- 1 - engineer electro-radio-navigator.
- 1 - engineer electro-mechanic.
- 1 - costs calculation technicians.
- 2 - 3 - electricians.
- 1 - radio - navigator.
- 2 - 3 - mechanics
- 1 - 2 - welders and lock-smiths
- 2 - 3 - cleaners - painters.

These brigades (4 - 5 teams or even more depending on the demand for such repairs) having skilled and experienced technicians and engineers could carry-out routine repairs on the vessels when they change abroad their crew for new one.

PROJECT CONCEPT FOR PREGOL SHIPREPAIRING YARD.

For the short term it could be good to create flying repair brigades consisting of 12 - 15 people and employing the following technicians and engineers:

- 1- engineer electro-radio-navigator
- 1- engineer electro-mechanic
- 1 - costs calculation technicians
- 2-3 - electricians
- 1 - radio-navigator
- 2-3 - mechanics
- 1-2 - welders and lock-smiths
- 2-3 - cleaners-painters

These brigades (4 - 5 teams or even more depending on the demand for such repairs) having skilled and experienced technicians and engineers could carry-out routine repairs on the vessels when they change abroad their crew for new one.

For the long term project there will be investment project of Maritime Container Terminal. Its transshipment is to be 1,1 mln tons/year including 20 and 40 feet containers

But from the capital input point of view which is going to be invested at gross value of 48 mld USD within 3 years period it looks not so optimistic.

It could be advisable to consider construction of the boats and rescue vessels made of reinforced fibre glass.

As shipyard dispose halls and labour forces it would be good to start such production because it does not need special facilities investment.

The market for this type of boats is very large both internal and external.

Prices for plastic rescue boats varies from 40.000 - 300.000,- USD per unit and still there is not national builder.

Shipyards import these boats mainly from Finland, Norway and Poland.

There are also a considerable interest of some west european producers to enlarge their production capacity by creating of joint-ventures companies . They deliver in the scope of joint undertaking : know-how, designs , materials and what is most important assure distribution of the products. Estimated yearly income of the shipyard from this production would be around 5-10 mln USD,

PROJECT CONCEPT FOR SVETLY SHIPREPAIRING YARD

For the middle time term could come into force the contract for the bunkiering boats of 300 t. displacement.

It originates from the joint design of 300 tons water bunkiering vessel and 330 tons cod -liver bunkiering ship and elaborated by Lithuanian Institute of Fleet

This bunkiering boat may be built for Kaliningrad Port Authorities in the number of 2-3 vessels per year

Cost of one unit is around 223.000,- USD (together with credti interests) and 189.000,- USD (without credit).

This undertaking is worth about 670.000,- USD - 892.000 ,- USD yearly and could be continued during 3-5 years period.

Private Co. "SAAMI " is going to build fish processing vessels at 60 tons of capacity and 4 vessels per year, and small stern trawlers designed for Barents sea,abt 80 tons of capacity and 4 vessels per year. Documentation for both types of vessels has been already prepared by "Inzgiprorybflot"from Nikolaiew and "Lithuaniana Institut " from Klaipeda.

Price for fish processing vessel will be around 110.000,- USD per unit and 140.000 ,- USD for stern trawler.

This could give shipyard yearly about 1 mln USD income.

For the long term it could be developed wood processing line to treat some kind of wood having large demand abroad. To this purpose it should be made some investment in rebuilding of the pier of 110 m length.

It is appreciated that production capacity will be 40-50 cu. m. of treated wood, which could give some income around 1. - 15 mln USD yearly.

TABLE I
SWOT analysis of shipbuildingyards

Strengths

Causes

Contracts for the new vessels are included lately at the price of 10% lower than the average level for the same type and tonnage of the vessels

Weaknesses

Causes

Contracts are usually concluded basing on the existing shipyard experiences, so called "list of references" which are required by the potential customers

Long delivery delay of the vessels (some time beyond of the contracts stipulation)

Opportunities

Causes

It is provided steadily increase of the world merchant fleet during the next a few years (bulk carriers, compound vessels and others)

Threats

Causes

To comply with increasing demand for the vessels, world shipping industry augmented twice their level of production (increasing the productivity of labor)

Effects

Shipowners from Malta, Greece, some from South American count interested to place the orders for new building vessels

Effects

Kaliningrad shipyards will be obliged to present such evidences when negotiate export contracts for the vessels, they have it obviously not for the time being

It causes rising of the final prices of the building vessels because of materials which increase by 7% - 9% yearly. Additionally shipyard must pay conventional penalties.

Effects

There is still demand on the market for the vessels (types like general cargo vessels, compound vessels, being of interest of the local shipbuilders)

Effects

There exist threat of intercepting of the majority orders for the vessels by the strong shipyards using new building technologies

Action

To develop offensively shipbuilding market activity by different intermediate

Actions

To increase the efforts taking over as much as possible of the Russian building orders

When building contracts are negotiated it must be taking into consideration the longer period of the vessels construction.
Max. shortening of the building period.

Action

Flexible and recognizing marketing in all directions. Open for the external contacts.

Action

To advance technological level of construction of the vessels and labor productivity

Table II

**Strengths and weaknesses of the shipbuilding
industry in Kaliningrad.**

Strengths	Weaknesses
First contracts to sell vessels abroad have been concluded, next under negotiations.	Long period of ships construction (14 months for general cargo vessel)
Floating docks well equipped with lifting outfits and floating cranes.	Lack of economy when the hull is constructed (no such need in case of navy vessels building).
Piers length with cranes, sufficient to equip two, three medium size vessels simultaneously.	Terms of payment very hard (first class bank guarantee needed for prepayment)
Qualified persons, very skilled workers, and own technological-design office employing 114 ships designers.	Practically does not exist computerized system of book-keeping.
Well done marketing with people speaking foreign languages. Participation at international fairs e.g. Nordshipping '95 Oslo	Government is not interested to give shipyard credits at low rate.
Brokers representatives abroad.	For shiprepair there are not available spare parts of western manufacturers.

Table III

Opportunities and threats for the
shipbuilding industry in Kaliningrad.

Opportunities	Threats
There are not traditional neighbouring competitors for the range of building vessels (only from China).	3 navy ships still have not been completed(frozen money).
Good market for the container and general cargo vessels of medium dead-weight tonnage.	Long delay in delivery causes rising of the final price of vessel because of material costs, and as result transaction may be not economically justified.
Low salaries of workers.	

SWOT ANALYSIS, REALITY AND VISIONS .

SWOT analysis - reality.

The strengths and weaknesses of the shipbuilding industry are listed in table No. III.

The weaknesses prevail the strengths and still there is a chance that this industry would be established as promising in the region in the years to come.

The situation of shipbuilding industry for the next 7 years shows the expansion of the capacity of the world fleet and it offers opportunities.

The opportunities and threats are shown in table No.IV. Although there is competition from China(the same range of building vessels) but Poland with its deadweight capa-

city (building over medium size) and advanced technology, and increasingly tight costs situation in the future, the opportunities are stronger than threats and of course if industry profits from the neighbouring with Polish shipyards.

SWOT analysis - visions.

The impact of weaknesses and threats of shipbuilding industry in Kaliningrad can be reduced and the strengths and opportunities improved giving some support as construction grants , tax benefits, restructuring aids financial programs , government ownship, research and development aids , sale aids.

Of course it is impossible to remove all weaknesses and threats, but their effect can be diminished. For example, without new technology of hull building as automated completion of the material and horizontal transport, cutting of steel plates with application of effective plasma arc cannot be shortened the building period of the hulls.

Also it is often mounted in the block of machinery compartment the majority of machines and installation still before assembly of upper deck when access to the block is easy. Without this technology cannot be shortened the equipment period of the vessel.

Some of the measures (as initial prefabrication of the hulls with computer aids, painting by sprayed method) can be implemented in short term (one, two years) others require more time. Most of the measures are on a company level, but others require regional efforts or central administration support as development of credit institutions.

STRATEGIES AND DEVELOPMENT AREAS OF SHIPBUILDING

General

According to the findings published by Fearnresearch in Fearnleys Review an increase of world merchant fleet has reached in 1994 the record level of 661,9 millions tons of deadweight.

1995 will be the consecutive fifth year of growth (average around 2 % yearly) of world merchant shipping.

Table 2.
Delivery of new tonnage in 1992-1993.

Year	Tankers	Bulk carriers	Compound vessels	Others	Jointly
1992	121-15372	6294331	14-1502	503-5029	700-26234
1993	125-16738	95-7911	5- 426	450-5038	675-30113
1994	128-17455	88-7892	11-1451	483-6534	710-33332

Findings show number of vessels and deadweight in thousand tons.

Tankers, bulk carriers and compound vessels above 10.000 tons deadweight.

During the last several years the production level augmented twice, it was caused by the increase of productivity of labour in all world shipyards. Main propulsion of these positive changes was quick technological progress in shipbuilding engineering.

Table 3.

Forecast of world merchant fleet development
in 1995-1997 in millions tons of deadweight.

Year	Tankers	Bulk carriers	Compound vessels	Others	Jointly
1995	258,0	225,0	25,0	151,0	659,0
1996	258,0	229,0	22,0	156,0	665,0
1997	261,0	230,0	20,0	160,0	671,0

Growth of new tonnage exceeded the level of the scrapping one, which in 1994 was 16,7 mln loading capacity.

The vessels of low technical standard and old units, worked out, threatening to the environment are of excess quantity.

Prices

Central and East Europe shipyards like Polish, Ukrainian, Russian recorded last year increase of their orders booked. Market activity focused on conventional and container tonnage. Russian and Ukrainian shipyards concluded contracts for bulk-carriers, tankers and general cargo vessels at around 10 % reduced prices comparing to the average prices of the world tonnage.

Table 4.

Average prices of conventional world tonnage
in 1993 - 1994 (mln USD).

Vessel type and deadweight DWT	1993 mln USD	1994
Tankers	90.000	46
Bulk carriers	45.000	23-24
	70.000 [^]	28-29
Product carriers	30.000	26
	45.000	28
		32-34

Shipyard modernization.

There are modernization works in the majority of shipyards at present, which in consequence will readjust the building of a whole range of modern vessels.

However the restructuring of the shipyards of Kaliningrad region must be implemented step by step, yet they start more and more to be open for the external contacts and approachable for the foreign customers to become respectable rival at the shipbuilding market. For the time being their strength are wage costs, comparatively modern techno-technological equipment and favourable climatic conditions. Still the obstacles to conclude the shipbuilding contracts are : financing and bank guarantee.

Reliability of shipbuilding.

Economic and political position after the break up of the former Soviet Union impose new terms for Russian shipyards and shiprepairyards. It demands deep restructuring and modification of existing production patterns.

A substantial problem is the considerable percentage of backward merchant fleet which should be scrapped and replaced by new ships.

Moreover the tonnage transmitted to Ukraina and Baltic countries need to be supplemented.

According to the findings published by Shipbuilding Institut of Krilow Russia needs in 1994-2000 the following units:

Table 1.

	units	total development mln tons
Merchant vessels	580	8,4
Fishing vessels	580)	1,5
River-sea vessels	360)	

Total cost of this new expenditure amounts to 22 mlrd USD. Most of these vessels are to be built at Russian shipyards. Shipyards must be prepared for this building plans which will comprise the following phases:

-First is 2-3 years period of restructuring of the shipyards, improvement of productivity, efficiency, quality, and protection of environment (see Annex . . .)

It should be considerably restricted and even given-up the production of special units such as warships in fa-

favour of the production of advanced merchant vessels and other types designed for civilian purposes.

-Second is till 2000 year when it is going to be continued upgrading of modern technology and civilian shipbuilding for internal and mainly for external market. This period of building for domestic market will be the good base to acquire references for presentation of the wide building offer to foreign customers and shipowners.

These ambitious plans of restructuring and conversion of shipbuilding industry may be difficult but it is must for shipyards and their management.

Presently shipyards decline from execution of domestic orders because of high inflation and deeply involved in debt of the main present clients-navy and other shipowners for the already delivered vessels, Resolution of these financial problems should be first of all through acquiring of hard currency.

Shipyards are starting to be open for external contacts and easy of access for foreign customers. Because of production profile they were practically till now isolated from commercial and cooperation contacts. There is no doubt that the advantage of the Russian shipyards are the wage costs, which are lower than those of other shipyards.

Project concept.

Besides these general opportunities and constraints for shipbuilding industry there is also advantage for market activity.

As some tankers - ice -breakers anchoring at the Baltic ports were taken over by Latvia after a break-up of former Soviet Union, it is necessary now to restore this fleet.

In order to deliver crude oil and its products to the north ports, where conventional tankers have no chance to call at these ports through most of the year, Central Administration is forced to charter such vessels. To this purpose a joint-venture company has been created with state shares that is going to build urgently at least 11 tankers-ice-breakers. Contract for these units is worth 250 millions USD. All together it should be built 44 units of this type to the end of 2000 year. The total cost of this undertaking at a rough estimation amounts to 900 millions USD.

The sizes of the tankers planned to be built are in the technological-productive range of the shipyard Jantar . It would be then a good opportunity for the shipyard to acquire at least a part of order for the vessels in question.

Competitors for Russian shipyards are for example Ukrainian ones, which production is destined for export. There are nine of them and they can built different type of vessels till 300000 deadweight.

Meanwhile Russian shipyards are adapted to build small and medium ships of deadweight till 12.500 ton (Jantar shipyard) and till 70.000 tons in other shipyards.

Sources of financing of the renewal programme of backward tonnage and modernization of Russian shipyards is merchant fleet capital being accumulated from incomes received by state budget as tax paid by shipowners.

A support should also be given from enterprises which cooperate with maritime transport and foreign investors—mainly by technology transfer, redemption of shares at the shipyards and creation of joint-venture companies. For example German holding of shipyards purchased some bundle of shares at Russian shipyards.

Readjustment of shipbuilding industry should concentrate on privatization. Central administration has apportioned three category of enterprises.

-The first category comprises that which will be privatized.

-To the second category belong these enterprises which privatization depends on government recognize and in this category are shipping companies and some of the shipyards.

-In the third category there are economic units and military establishments which will not be privatized at all. That are to be some shipyards and commercial ports.

Based on the strategies and development areas as presented above some projects can be formulated. Some of them point out action in the short term and they can be formulated as concrete proposals. Others are more for the long term over 10 years.

For the short term, project can be formulated in relation to investment in new technology of shipbuilding and improvement of the production facilities.

Second type of projects are development assistance or training projects which concern improvement of marketing and higher cost of efficiency in production.

The long term projects for shipbuilding yards relate to building oil pipe line and new slipways.

This is something the shipyard will have to consider over next few years in order to formulate their own individual or joint investment project.

The question arises whether the shipyards should undertake these activities individually on their own or if some assistance will be provided to them by the Kaliningrad Administration or by UNIDO.

TABLE IV

SWOT analysis of shiprepairingyards

STRENGTHS

Causes
Creation of joint venture companies having the network of shiprepairing localized in different places

World economic is slowly coming out of recession

Effects
It will get easier effects to the larger repair market.

Prognoses for growth of demand for repair and reasonable increase of shiprepairing

Actions
To create companies with foreign capital participation like:
SVETLY shiprepairyard and shiprepairyard
Marine engineering service
Restructuring of the shipyards, offering wide range of high-quality services and favorable financial conditions

WEAKNESSES

Causes
Shipowners look after economy in the exploitation costs and repairs of vessels
Russian shipowners carry out repairs far from Russian shiprepairyards

Shipowners increase the pressure on classification societies and administration to reduce the technical exigencies during the routine inspections
Lack of long-terms credits at a reasonable level of rates

Effects
Enlarge the overhaul life-time of the vessels

Decreasing of the national Fleet vessels to be repaired

Decreasing of the scope of the works to be done on the vessels

Direct financial support should be changed in to different grants as :
reconstructing aids , scrap and building aids tax benefits , customs duties levy's and a restrictions , research and development aids

Action
Decreasing prices of the repair services and offering good payment conditions
To present to the shipowners its own repairing brigades being ready to repairing at any place at the world
Better quality and complexity of the executed works

Support of national shiprepairing industry is prevailing and its methods are different in particular countries.
The question is to local or central administration to be resolved

OPPORTUNITIES

Causes
Increasing of the age of the vessels being in services
In countries of the high wage costs they close up of the shipyards , limit the number of employment

Effects
There will be more vessels to be repaired
The offers for repairs increase on the market

Action
To recognize the market and catch the vessels as above

Creation of holding comprises shiprepairing, shipbuilding machine, industries and military complexes

It would be easier to include to the cooperation banks to get credits and bank guarantee for the future undertakes. To create common marketing and promotion center for regular examination on the market

The way to the capital holding should lead through intermediary phases organizations with the aids of Kaliningrad administration

THREATS

Causes

To increase of potential repairs (undertaken of new investment at middle and far east)
Changes of the structure of repair works , decreasing of electric , machine and mechanical works

Effects

More vessels to be repaired e.g. South Korea, Japan and so on.
The big electrical and mechanical divisions largely equipped with different treatment machines are not more used

Action

Implementation of new technology (i.e. cleaning, priming and painting of the ship hulls)
To increase works connected with docking of the vessels, cleaning, painting and piping.

Table V

Strengths and weaknesses of the Ship-repairing industry in Kaliningrad.

Strengths	Weaknesses
Qualified persons, very skilled workers, engineers.	Labour efficiency is 2-3 times lower than abroad.
Outfitings : piers well equipped with cranes, technical gases and welding stations.	Salaries of employees (welders, electricians) 1,5 -2 times higher in private companies than in shipyards.
Floating docks, floating cranes of sufficient lifting capacities for carrying the repairing works on the wide largeness of the vessels.	High risk of credits when it comes about shipping.
Management attitudes towards restructuring of the shipyard.	Lack of long terms credits at a reasonable level of rates. Low efficiency. No stock of spare parts for repairing of the ships machine and equipment.

Table VI

Opportunities and Threats for the Shiprepairing industry in Kaliningrad.

Opportunities	Threats
Low salaries of workers.	Concurrences from neighbour countries: Lithuania, East Germany and Poland (which might be converted in giving of some licences i.e. Metallock from Poland).
Conveniently situated at Baltic coast.	General lack of flexible organization of production to use new technology of west countries.
Lack of orders have been replaced by implementation of new activities.	Labour cost advantage probable to diminish.
Lying on crossing shipping lines from Scandinavia to Latvia, Lithuania, Estonia.	

SWOT ANALYSIS , REALITY AND VISIONS

SWOT analysis - reality.

The strengths and weaknesses of the shiprepairing industry in Kaliningrad is given in table No.

For the time being the weaknesses outnumber the strengths and it needs a lot of work to be done to establish this industry at the level it took place before.

Present situation is entirely different. It has been broadly described in the chapter entitled "Market position of shiprepairing " and one can only mention that " all prognosis state that it can be expected further growth of world fleet and not great drop of middle age of the vessels".

Although there is little scope for expansion of the capacity, it also offers opportunities, .

The opportunities and threats are shown in table No.

Although there are competition from the previous East Germany, Poland on the market with advanced technology and increasingly tight cost situation in the future, the opportunities are stronger than the threats and of course if industry profits from the neighbouring with shiprepairing yards (e.g. Poland).

SWOT analysis - visions

The impact of weaknesses and threats of shiprepairing industry in Kaliningrad can be reduced and the strengths and opportunities improved giving some support as re-constructing aids, financial program , scrap and repairing grants.

Of course, it is impossible to remove all weaknesses and threats, but their effect can be diminished.

For instance, without new technology of cleaning and painting of the ship hulls cannot be shortened the repair period and required by ISO 9004 standard quality of the works.

Some of the measures (as introducing new technological devices and control-measuring appliances) can be implemented in the short term (two, three years) - others require more time.

Most of the measures are on a company level, but others require regional efforts or central administration support as development of credit institutions.

STRATEGIES AND DEVELOPMENT AREAS OF SHIPREPAIRING

General

International market of shiprepairing is more stable than shipbuilding industry. In 1985-1994 the demand for repairing grew by 30 %. As the average prices grew only by 5-7 % total income of shiprepairyards, taking into consideration the inflation, maintained almost at non changed level.

Reliability of shiprepairing.

As far as demand is concerned there are following factors:

- volume and structure of world fleet,
- opportunity at the freight market,
- technical progress
- shipowners policy of repair,
- classification rules and maritime administration requirements.

The largest growth of the vessel both quantity and dead-weight in the above period has been noted for: container ships, ro-ro vessels, liquefied gas carriers and chemical tankers. Not large quantitative growth concerning bulk carriers has been noted. On the other hand percentage of general cargo vessels and combined bulk carriers in world fleet decreases systematically.

The age of the world fleet is advanced. Average age of the vessels is 18 years at present, and contribution in the world tonnage of the vessels in the range of 10-20 years is 50 %, whereas it was only 30 % in 1980.

In 1980 - 1990 the recession was continued at the freight market and offers prevailed on the demand.

Only since 1991 it has been observed some animation of the ship's market. Shipowners started to look after economy in exploitation costs and repairs of the vessels. Shipping companies limited to the minimum the scope of repairs of the ships and tried to enlarge the overhaul life time of vessels.

Rapid slumping of the demand for the repair services of the former socialistic countries and Soviet Union's fleet (especially great one) have had unfavourable repercussions on the economic conditions of shiprepairing shipyards and not only in Kaliningrad region but in whole Russia as well as out of Russia.

Repair policy of shipowners directed to reduce the costs, conducted to increase of repairs executed during the exploitation of the vessel without calling to shiprepairyards and performed in great part by the manufacturers' services and ship's crew.

The ocean fishing fleet from Kaliningrad which consists of 190 trawlers, 16 mother factory ships, 37 transport vessels and 111 auxiliary crafts has several varieties of operational bases in Callao, Las Palmas and Dakar. Cooperation partnership agreement existing between fishing company and foreign partner made possible the fishing vessels owners to have over there their own repair. These service brigades carry-out routine repair on the vessels while their crews are exchanged for new ones.

The fishing vessels may fish at any fishing grounds without calling to shiprepairyards, what means both economy in ships voyages and increasing of fish catching. Such situation is good for the fishing companies but shiprepairyards lose clients and orders.

Also shipowners increased the pressure on classification societies and administration to reduce their technical exigencies during a routine inspection. It had influence together with systems of continuous inspection on decreasing of scope and frequency of repairs of the vessels.

Technological progress applied as well in new generation of vessels as in repair technology of the vessels decreases labour consumption and frequency of repairs, which caused reduction of repair demand.

In the past ten years period only small increase of tonnage and structural change of world's fleet worked toward an augmentation of the demand for the repair of the vessels, all other factors toward its decreasing.

As it has been mentioned in 1985-1994 only minor changes were noted in repair services supply. In many countries, specially in the countries of high wage costs, there were noted considerable decrease of repair potential (closing-up of the shipyards, limitation of employment, restructuring). It concerns especially Sweden, Great Britain, Belgium, USA.

At the same time it has been observed in other geographical regions an increase of potential and even undertaking of new investment as for example at middle and far east.

In the said period it has been noted a considerable decreasing of employment at shiprepairyard which ranged from 20 % to 50 %.

There is also oversupply of repair potential and it is estimated that its using is around 63 %.

Global demand on the market of shiprepairs has influence on possibilities and conditions of acquiring of the contracts.

But the decision taken by the shipowners concerning choosing of the shiprepairyards are based on:

1. localization of the shiprepairyard,
2. prices of repair services, payment conditions,
3. quality and complexity of the executed works.

Localization of the shiprepairyards at the vicinity of the principal shipping routes is an obvious advantage. Therefore the growth of the shipping in the region of Pacific Ocean in comparison to the shipping at Atlantic Ocean caused that the shipyards of South-East Asia, Far East and Japan are in more favourable situation than European shiprepairing yards.

Price level of repairs in the particular country is determined by the following factors:

1. height of salary,
2. labour productivity,
3. taxes and dues ,
4. currency rate of exchange.

Differences of salary in various countries and geographical regions are very large. Proportion of the highest to the lowest rates per hour at world shiprepairyards is 1 : 7 .Differences however between offered prices of the repairs are considerably smaller because are moderated by influence of labour productivity, system of taxation and currency rate of exchange.

It reflects table No.5 where are showed relations of the prices of shipyards in main countries.

Table 5.

Price reports of shipreapiring in various countries (Singapore = 100).

Country /region	year	1992	1994
USA		180	180
Belgium		130	130
Denmark		135	137
Finland		140	145
France		130	130
Germany		140	140
Holland		130	127
Norway		140	142
Sweden		140	143
Great Britain		120	120
Greece		105	109
Italy		115	117
Portugal		105	105
Spain		115	117
East Europe		75	80
Japan		145	145
China		50	48
Singapore		100	100
Hongkong		95	100
South Korea		110	116
Middle East		115	112

The above factors have brought changes of participation of respective geographical regions in needs of repairs , which shows next table no 6.

Table 6.

Appreciated shares of geographical regions
in the world market of ships repair.

Region	Year	1985	1987	1989	1991	1993
North Europe		31,4	25,5	24,9	24,3	24,0
South Europe		15,9	21,8	17,0	17,8	18,0
USA		5,4	5,1	4,7	4,8	4,3
South-East Asia		6,0	9,8	16,0	14,0	15,2
Japan		9,8	14,6	13,5	13,9	13,8
Middle East		0,7	2,0	2,1	2,3	2,5
Far East		8,1	8,6	8,4	10,4	10,6
Rest of the World		13,0	12,8	13,4	12,8	11,6

In the period in question it can be seen constant, slow change of the structure of repair works executed by the shipyards. Increasing tendency show the works connected with docking of the vessels (hull works, priming and painting etc) and pipings .

From the other side are decreasing: electric works, machine works and in particular mechanical works.

It has not been noted jumped progress in technology of shiprepairing. However it is observed constant progress in quality of performed repairs. It is executed by implementation of the total systems of quality securing (i.e. defined by ISO 9004 standard) and introducing on the market new technological devices and control-measuring appliances.

In the discussed period can be seen only slow change of repair works structure. There is increase of the docking works (hulls, maintenance-painting etc) and piping, however electric, machine and in particular mechanical works are decreasing.

A considerable progress has been noted as far as painting is concerned both internal and external of the vessel's hull. It tended to enlarge the covers durability, the possibility to coat them in non favourable conditions, decreasing of contents of volatile dissolvents and elimination of noxious solvents (like tin compounds in antifouling paints).

Considerable progress can be expected in hulls cleaning before painting. Generally used sand blasting and shot peening which ensures great effectiveness and good cleaning quality shows however some disadvantage because of dusting and toxic waste.

Technological tests of hydromonitoring cleaning at the very high pressure (2000 - 4000 bars) undertaken lately seems promising.

Marketing deficiencies.

What technology of the shiprepair market will be in the nearest future?

All prognosis state that it can be expected further growth of world fleet and not great drop of middle age of the vessels especially as far as container ships, tankers and chemical carriers are concerned.

It will also increase pressure on improvement of technical standard and performance of requirements of security regulations of the vessels.

It should be underlined IMO's activity. In the frame of correction of SOLAS convention it has been inserted hard programme of inspection of bulk cargo vessels aged more than 5 years.

The same hard regulation of MERPOL 73/78 convention is for tankers.

SOLA's convention to be inserted in 1996 makes possible the inspection of the vessels at ports (Port State Control) if they fulfill the security demands.

IMO is going to create data base of vessels (International Ship Information Database) which makes possible a security control of the world fleet.

These factors and improvement of freight opportunity which may be expected because of coming out of recession of world's economy, make possible prognosis of growth of demand and reasonable increase of shiprepairing prices in the years to come. However it should be remembered that prices of repair works grow more slowly than demand for shiprepairing.

It can not be forgotten as well the considerable over-supply of shiprepairyards potential in comparison to the repair demand of the world fleet. It means that not all shipyards will profit to the same extent of the supply improvement and competitors will not decrease at the market.

Participation of European shiprepair yards at the ship-repair market will decrease because of decreasing of this region in shipping and relatively high cost of labour and disused floating docks potential.

The shiprepairing yards which thanks to restructuring, offering of wide range of high quality services and favorable financial conditions can attract shipowners and attain good reputation at the market, can count on considerable growth of their incomes.

It can be easier to attain this goal for these shiprepair yards which will acquire capital or make joint-venture capital companies together with other shipyards.

These holdings having the network of shipyards localized in different geographical regions will get easier access to the larger repair market. Disposing of considerable capital they can carry on more active development policy and offer more favourable payment conditions for the repair services.

Project concept.

Income from the repair services in 1993 is estimated on 300 mln USD whereas total income from repairing of world shipyards is 7000 mln USD and European shipyards 3000 mln USD. So participation of Kaliningrad shipyards in the World market is 4 % and in European market is 10 %.

In the years to come shiprepairing yards of Kaliningrad region can expect increasing competition of the shipyards of previous East Germany, Poland and Ukraina.

For maintenance of the competitiveness of Kaliningrad's region shiprepairing yards and strengthening their position at the world market it should be necessary to undertake various actions as follows:

- permanent restructuring oriented towards the costs decreasing and improvement of management and in consequence to keep the prices competitive.
- enlarging of offering services range and diversification of the production.
- creation of industrial-financial groups.
- permanent increasing of production quality by introducing of systems which assure the quality and initiate modern technology and control findings.

- development of various forms of marketing
- appointment of joint organization which shall elaborate the common price policy, execution of repair condition, development etc

Based on the strategies and development areas as presented above some projects can be formulated. Some of them point out action in the short term and they can be formulated as concrete proposals, others are more for the long term over ten years.

For the short term, project can be formulated in relation to investment in new technology of ship-repairing and improvement of the production facilities.

Second type of projects are development assistance or training projects, which concern improvement of marketing and higher cost efficiency in production.

The long term projects for shiprepairing yards relate to building of container terminal and new slipways and roofing halls for hull prefabrication elements.

This is something the shipyard will have to consider over next few years in order to formulate their own individual or joint investment project.

The question arises whether the shipyards should undertake these activities individually on their own or if some assistance will be provided to them by the Kaliningrad Administration or by UNIDO.

MARKETING PROTECTIONISM

In world maritime economy, especially in shipbuilding industry still there is no free play of market. For example Japanese and South Korean shipbuilding industry protectionist policy caused that shipyards of these countries intercept nearly 60 % of total world production.

European countries like France or Spain openly and Germany or Denmark secretly promote financially restructurisation, investment and shipbuilding production. European Common Market assumed in 1987-1992 programme of decreasing of shipyard production subsidies from 28 % to 9 % (it does not concern developing countries which can reach 30 %).

But it should be underlined that any country possessing strong shipbuilding and shiprepairing industry never renounced in full scope from the grants.

Also circles of shipbuilding and shiprepairing industry of Kaliningrad region hope and expect not to be deprived of the rights for financial support of administration.

Maritime Subsidies

(Report on Foreign Shipbuilding Subsidies).

Table 1

Grants for shipbuilding industry in various countries.

Country	1	2	3	4	5	6	7	8	9	10	11
aid form											
Belgium	x				x		x	x	x	x	
Denmark	x		x			x				x	
Finland	x		x		x		x			x	
France	x	x			x					x	
Germany	x	x	x		x	x	x	x		x	
Greece		x	x		x	x	x				
Italy	x	x	x		x	x	x	x	x	x	
Japan	x	x	x		x				x	x	x
South Korea		x	x		x	x	x				x
Holland	x	x	x		x		x				x
Norway	x		x				x				x
Poland		x									
Turkey	x										
Great Britain					x			x		x	

Between direct and indirect assistance to national shipbuilding industry there are following:

1. Construction grants.
2. Reconstructing aids,
3. Financial programs.
4. Scrap and building aids
5. Tax benefits.
6. Sale aids.
7. Customs duties, levies and restrictions,
8. Government ownship.
9. Cabotage trade support.
10. Research and development aids.
11. Other aids.

It can be stated that support of national shipbuilding industry is prevailing and its methods are different in the particular countries. The richer country of more developed capital market the wider range of government aids is noted.

Assistance programs of some countries are rather modest. There are one or two means of financial support.

The governments of highly developed countries of Europe or Far East give many means of direct and indirect support to shipbuilding industry. Italy, Germany, Japan, Spain are at the ranking top .

As it results from this table very often assistance form are direct grants for shipbuilding industry, which were used by the majority of countries in question. There are also reduced credits, credits guarantee in the frame of different financial programs and sales and customs privileges.

It should be mentioned that still there are state owned shipyards in European Common Market.

Any capital market needs of course: companies in search of capital and investors looking for profit.

The first part is clearly not a problem, the second part is a surprise- there is capital available for investment.

Russia saved an amount equal to 33 % of GDP, slightly more than the average savings rates in 1986-92 of Asia's three giants- China, India and Indonesia. The difference between Russia and these three countries is that in their economies high savings also meant high investment. In Russia an amount equal to only 16 % of GDP was invested last year. It could be the source of financial support for shipbuilding and shiprepair industry.

MANAGERIAL ORGANIZATION.

Between various managerial systems (i.e. Db IV ,INGRES, ORACLE,CISAM etc) there is one which has been adopted at some Dutch shipyards and design offices.

Dutch shipyards and shiprepairingyards number some hundred employees and production multiple. It comes about MUSIS (Mucon Shipbuilding Information System).

This system distinguishes the following features:

- easy to use,
- modular building ,
- can be expanded and adopted to the additional customer requirement,
- possibility to communicate with other standard pockets,
- lower investment costs,

and the moduls it composes are: base packet,planning and realization,material control,invoicing information, for different level of management (from board of directors to down) interface to the packet EXACT (financial accountant system).

Central base of data (storage of necessary information for calculation,statistics,reports).

Planning (planning detailed and summary).

Account modul (it gives Possiblity to calculate in different vessions).

Time registration (it can be selected the production tasks).

Control of material (buying ,ordering,check of delivery).

Reports about realization costs . Management Information, Financial reports.

It can be obtained more detailed information about the system in question at the address:

Kupras Computer Systems
Cesar Franck Rode 9 , 2717 BA
Zoetermeer, Nederland
tel. : + 31 79 210 347
Fax : + 31 79 522 924

Taking into consideration the above computer facilities it can be pointed out the following:

Shipyards offer should guarantee moderate profit and should be competitive to the expected prices offered by competitors.

It is essential to specify services price (before contract signing) basing on the price of man-hour number, materials and ready-made products and services of sub-suppliers.

Before ordering of materials it should be checked the own stock and recognized the other materials which are already destined for other projects.

To fix the offered prices it should be profited from the information about already made projects where preliminary calculations were comparable with existing costs.

Running and exact information about realization of particular stages of the shipbuilding, delivery time and costs make it possible to undertake necessary steps to establish quickly profit and loss prognosis.

Main and medium-level of shipyard management is interested in current control of technical and economic realization of the tasks and when it is necessary to intervene in an efficient way.

Central and integrated data base should enable desirable converting form of information. The potential set of programmes which is necessary for realization of the orders (projects in connection with central data base will be the management system

Skill of use from the services of such system will enable to the shipyard decreasing of administration costs, optimize the time and costs of preparing and realization of projects/orders.

Data bases are ordinary "relational data bases" and programming is made in one of well-known languages depending on the base-size and required speed of data processing (see as above).

HOLDINGS

As the situation of shipbuilding and shiprepairing industry is compound in Kaliningrad and the region the initiative should be put forward not through official channels and central planners but in virtue of common interests and advantages.

It would appear advisable to create a new form of organization /holding/ which would comprise ships industry, machine-industry and military complex. This would be favourable for reorganization and restructuring of shipyards and other enterprises being the participants of the holding in the scope of taking advantages of fixed assets, employment, stock and reserves, current accomplishment of concluded contracts and liabilities.

In the scope of holding it would be easier to include to the cooperation banks to get credits and bank guarantee for vessels and production for machine industry. Very important factor for these purposes will be foundation of the marketing-commercial and promotion center on the base of the existing for example Section at the JANTAR Shipyard and support, which has already relation with foreign market and capital and broking agency in Norway.

Marketing activity should focus on regular examination of the market and prognosis of demand for vessels and repairing and preparation of data before decision executive and investment will be taken.

The way to the final shape of capital holding should lead through intermediary phases of organization .
As to the holding could only accede commercial code companies it would be necessary to transform state enterprises into the single State Treasury Companies.

SHIPYARD TECHNOLOGY

Most spectacular progress in processing of hull components, starting from steel stock with automated completion of the material and horizontal transport as well cutting of steel plates with more and more broad application of effective plasma arc.

Numerical control cutting machines cut often without margin borders of hull, plates, bended them at the rolls or pressed spatially with guarantee sufficient reciprocal matching of mounted block contacts.

There are also tests to cut different material and steel by means of water stream with abrasive particles under the presser of 400-250 MpA, what gives smoothly polished edges without thermal changes of structure and shape. Highpressure water stream with abrasive particles was applied for treatment of surface.

Conventional lagged electrodes are more and more replaced by welding in gas shroud and it is broaden also application electrodes with core.

During the equipment of the hull dominates tendency to execute the largest works in the phase of blocks assembly at the roofing hall.

It is often mounted in the block of machinery compartment the majority of machines and instalation still before assembly of upper deck when access to the block is easy.

Also employs prefabricated blocks of pipes different kinds.

Segments of pipes, ventilation and cables running under the decks are mounted during the prefabrication in horizontal position after upturning of the section. In cabins equipment there is often used method of moduls prefabrication.

Changes in installations for mounting and launching of vessels took place.

The great dry docks which started to displace the previously generally used slipways are installation very costly and not serviceable for repairing and reconstruction during the recession.

Because the vessels, fully equipped coming for repair need more depth of dock chamber which is then hardly accessible more and more interest has been given then to syncroclifts which lifting capacity from several hundred tons risen lately to several thousand tons. Thanks to adequate sensors it can be controlled during emerging of vessel the weight of lifting object and position of centre of gravity.

At the initial prefabrication of pipe lines there are systems of computer assistance, which basing on ship's design gives the special shape parameters and dimensions for all phases of processing from collecting material from the stock- through bending and measurement of ready made pieces.

During the prefabrication there are used different type of automatically operated holders and fixing which replace clamps welded to the hull.

Different devices are used for marking out of assembly line, leveling and honing, in this optical devices and using of lasers.

In the conservation-painting works it is used new kind of anticorrosion priming for protection of hull. Instead of used so far priming on the base of zinc-silicon with contents 60% - 70 % of zinc it is preferred now priming of new generation containing only 20 % - 30 % of zinc, more resistant for high temperature of welding and cutting, increasing persistence of coating and less harmful for environment.

On the vessels being built under the roof it can be used non-zinc priming, ethylsiliceous, which however not securing three months protection does not pollute hull atmosphere.

Painting of hulls is made by sprayed method, with application of automatic devices for shower and for leading nozzle over the painting surface.

COSTS IN SHIPBUILDING INDUSTRY.

Costs of material .

A great importance for the level of material costs have the alterations of the basic materials prices on internal market.

Main European shipyards buy these materials first of all on the internal market (e.g. Jantar Shipyard has bought most of equipment destined for the Estonian Shipping Co. vessels abroad from Renk ,Wartsila Diesel, Mac Gregoir Navire , Lubherr Blohm a.Voss).

Hull plates prices for example show variable rate of growth. The highest increase 11 % - 19 % was in the seventies and nowadays this rate distinctly weakened (from 279 USD/t in 1985 to 500 USD / t in 1994).

Wholesale prices of diesel engines grew more slowly than the plates and amounted to 3 % - 6 % yearly.

Growth of prices of electric and electronic equipment (engines, measuring devices, control systems etc) show normal course .

Since the eighties prices have upward tendency. Average yearly growth was 2,3 % - 3 %.

Total growth prices of steel plates and equipment have caused general increase of materials at shipbuilding industry in the past years.

However the price factors resulting from this tendency showed progressively weakness.

Simultaneously it has been observed since the middle of 1980 s advancing fall of material expenses for the building vessels.

Cost of labour.

Growing tendency as factor of costs and prices formation show costs of labour. Shipyard contribution in the general worth of building vessels amounts to 40 % - 45 % depending on the equipment share.

In the West countries it could be average 35 % and after deduction of the costs of delivery from outside shipyard, the 77 % - 88 % of general cost of shipbuilding industry make the costs of labour. This high share shows at the same time the basic sense of the wage costs as international factor of price and competition formation.

According to the international division the cost of labour could be divided into remuneration for the executed labour and general costs which burden the labour (margin).

The minimum level of wage costs at the shipbuilding industry defines decisively the height of hour rates.

The participation of wage costs brutto amounts to 70 % of general costs of labour and rest 30 % is margin. Generally it can be stated that in majority of the West countries there is lately increase of margins on wage costs and it reached even 80 % of costs of labour.

It should be underlined that this is the real good opportunity for Kaliningrad shipyards which basing on their lower costs of labour could compete and win with the competitors quoting competitive prices for the ordered vessels.

Cost of labour and productivity of labour.

Nominal cost of labour does not reflect the real level and development of wage costs in shipbuilding industry. To appreciate their real influences on the prices of the building vessels and the market competitiveness it is necessary to compare them with productivity of labour.

Productivity of labour in shipbuilding industry could be measured inter alia by production volume in BRT on one employee per year.

But it should be also mentioned that it depends on utilization of productivity of labour of the shipyard.

What does it mean the shipyard labour productivity? Shipbuilding production is formed by the following factors: manpower, means of labour and objects of labour.

The determinants of the shipyard production extent is its labour productivity what means the possibility of vessel building in determined tonnage formulated by burden and register tons in the given time (e.g. year) and in the best utilizing of all production factors.

About the production capacity of the shipyard decides the following factors: means of production, objects of labour, manpower, used technology in production process, organizing efficiency of production and its assortment framework.

The basic production means of shipyard Jantar are for example:

- floating dock and slip ways where vessels 12 - 14.000 t. deadweight can be built,

- technological lines of steel plates processing,
- technological lines of hull prefabrication,
together with machines and instalations,
- piers equipped with cranes.

The determined part in forming of productive capacity of the shipyard are floating docks and slip ways.

This result from the basic sens of technological process of hull mounting in ships building.

The size of building hulls are limited the dimensions of assembling parts.

Between the particular kind of productive capacity used at shipyard it must be kept the suitable proportion.

It manifests in adaptation of technological lines of hull elements processing, technological lines of hull prefabrication and equipped parts for the need of assembling parts.

Lack of the suitable proportion expressing by non-adjustment of equipped parts to the need of hull building parts may make difficult or render impossible to equip vessels.

When calculate productive capacity of the shipyard there are other factors (e.g. skilled stuff) which have influence on its utilization.

Here the question arises whether the shipyards should undertake the activities individually on their own or if some assistance could be provided to them as a group or as part of a larger group, by the Kaliningrad Administration or by international organizations as UNIDO.

RESTRUCTURING STRATEGY AND MANAGEMENT OF THE SHIPYARDS
IN ECONOMIC CRISIS

Shipbuilding and shiprepairing industry are forced to operate in unstable and stormy surroundings.

Crumbling, frequent changes and inconsequent rules of economic factors makes difficulties of efficient functioning of great industrial structures.

Shipbuilding and shiprepairing industry in Kaliningrad are still faced with the following problems:

- small flexibility and mobility
- awaiting for disposition from the top
- delaying in formation of the auxiliary works
- subsidy depending
- low profitability
- small innovation
- long investment cycle
- long period of the introducing of changes
- to see changes as threats
- deteriorating position on the sale market
- low motivation for labour

This situation could be changed during some years basing on competent and proved in practice advisory programmes.

Here below there are two different solutions one classical (linear) and second modern (multieffect).

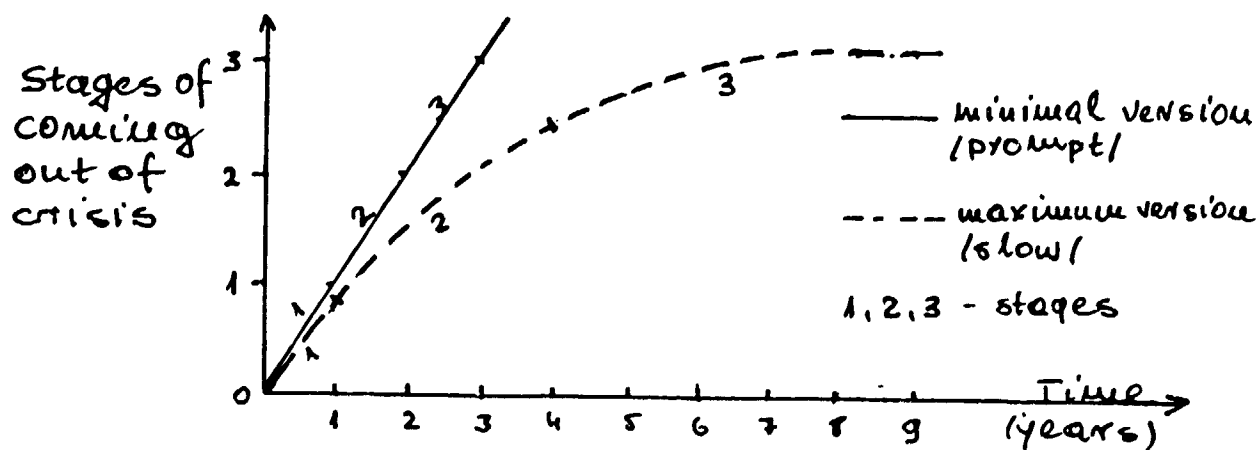


Figure 1

Linear thinking of overcoming of the crisis is in 3 stages and it lasts 3 - 9 years. It is long time but of frequent occurrence in the practice.

It entails firstly overcoming of the crisis in order to come up in restructuring frameworks.

After its realisation it should be undertaken new strategic steps.

Uptoday solution is multieffect action which leads on to parallel realisation of three projects:

1. antycrisis programme
2. restructuring programme
3. to acquire the new strategic position

This parallel thinking considerable reduces the time of the way coming out of crisis and it lasts from 1 to maximum 5 years.

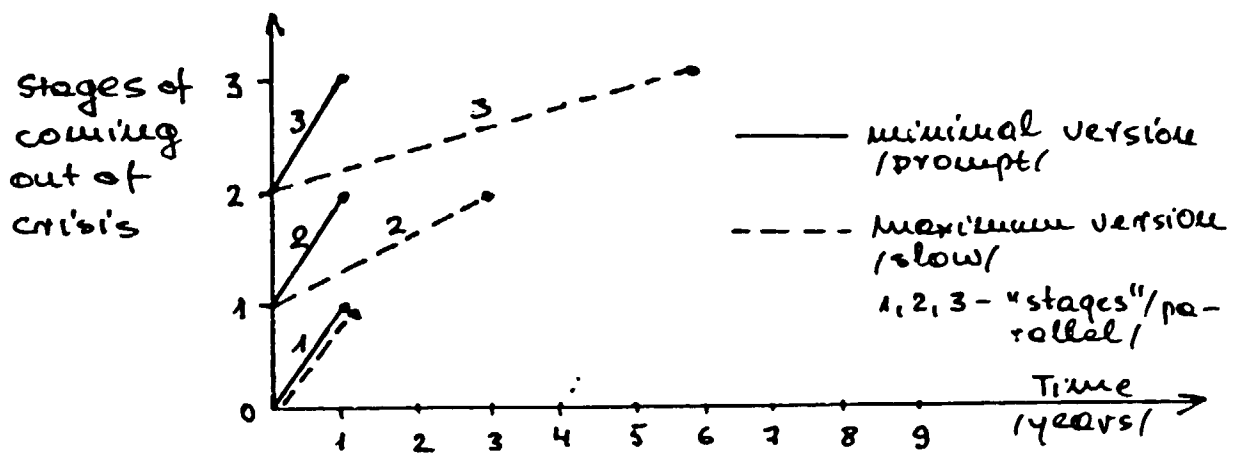


Figure 2

To implement it in practice it should be profited from conception of "network enterprise".

It needs to be separated the enterprise areas of the result as following:

1. areas in which competences and possibilities of enterprise allows it for improvement in report sale/costs
2. areas in which competences and possibilities of enterprise will not give satisfactory report sale/costs
3. potential areas of strategic development of enterprise.

To define and resolve the problems at these areas it needs the appropriate structure decisions.

Exemplary solution is given below:

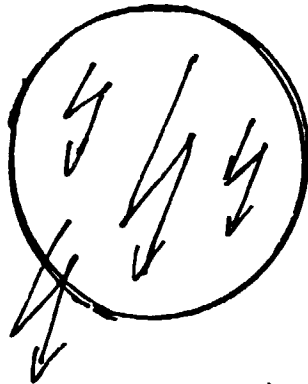


Figure 3 Company in crisis

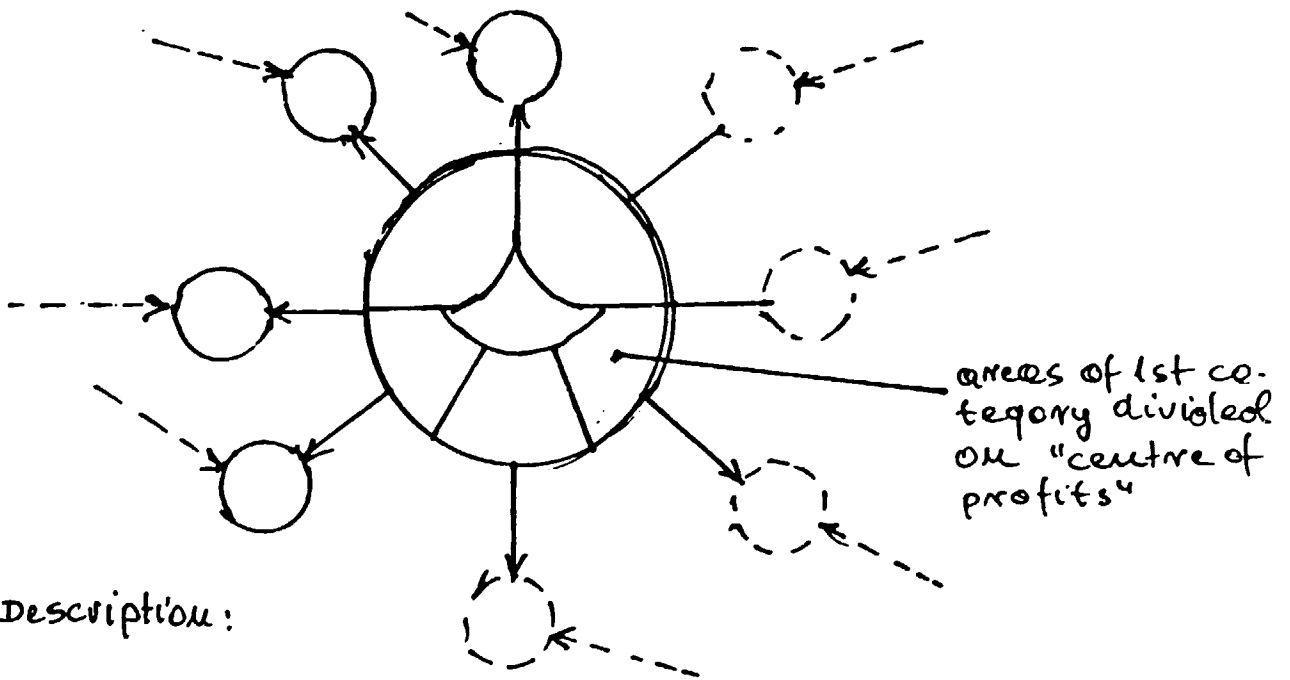


Figure 4 Company after structural decisions

It has been used the parallel actions as follows:

- defensive (to live on) to receive independently good reports sale/ costs in the areas of 1-st category,
- offensive approach in order to improve reports sale/costs in the areas of 2-nd category restructured in join enterprises,
- innovated approach to the areas of 3-rd category through the form of joint - ventures.

Practice of the last : - 5 years proves (e.g. Poland) great usefulness of multiefect actions to fight with the crisis at the shipbuilding and shiprepairing industry.

As it results from the above one of the very important factor of coming out of the crisis is restructuring programme for the Company.

As far as shipbuilding and shiprepair industry is concerned restructuring decision must be taken considering the statements as follows:

1. restructuring conditions,
2. time when restructuring decision is undertaken,
3. time of realization of restructuring project,
4. risk and its minimalization,
5. economic effectiveness of restructuring.

It comes about reconstruction and modernization of fixed assets. For shipyards and shiprepairing yards as Jantar, Pregol, Svelty, Marine Engineering Service it means purchase of modern machines (most of them are more than 15 - 20 years old), different welding, painting facilities e.t.c.

This industry characterizes extensive capital consuming of investments small profitability and risk.

Very substantial are tendencies to create associations, joint-stock and joint-ventures companies (like Marine Engineering Service and Pregol shipyards)

Economic condition of shipyards and
financial stimulation.

Improvement of current financial availability which is connected with state policy and managing competences. It must be reduced needless and ineffective elements of fixed assets. To sell or to give in leasing part of property as halls, shops, engine rooms and machine tools in production divisions (as it takes place at Marine Engineering Service, some halls have been rented to Company which renders radio-navigation services both for the shipyard and for external market).

The repairing of the vessels based now-days on the spare-parts which should be available at the stock of the ship-repair yards (some of Kaliningrad shipyards dispose about 30 % of the required spares). It is not justified to keep large divisions equipped with heavy machines equipment.

The aim of the shipyards restructuring is getting independence of the internal productive- services structures. Introducing more elastic management system with guarantee of freedom in undertaking of the decisions.

Increase of interest of quality and labour productivity, decrease of prime costs, drive to profit and attract capital both domestic and external.

To create holding structures, which are going to facilitate more effective investment cash flow, to impact on state policy and even of its creation (see separate chapter).

Generally it should be underlined that restructuring barrier is lack of sufficient funds both domestic and external.

SHIPYARD'S EMERGING MARKET

No major political group now argues that private property is inherently bad thing. Yet the more difficult question remains - what sort of market will the country develop?

Table 4

The differences between some countries markets.

Country	GDP per head USD 1992	% of total employment 1990-92		
		Agriculture	Industry	Services
China	20100	73	14	13
Poland	4.980	27	37	36
Hungary	5.730	15	31	54
Russia	6.220	20	46	34
OECD average	17.700	%	28	66

Whereas most markets need to spur their growth, Russia with the figure 46 % needs to de-industrialise to offer Russian people a better standard of living. Russia however enjoys advantages denied to other emerging economies. There are immense natural resources such as oil, gas, precious metals and diamonds as well as human resources: a universally literate workforce and an abundance of scientists and engineers. Russia's infrastructure may be in need of an overhaul, but at least there are the electricity, the roads and telephone lines that other markets lack.

Opinion polls consistently show that Russians want more than anything else stability and normality. What they mean by stability is easy to understand: stable prices, a job to go to, law and order.

The whole decision-making process has been reorganized. "The country is no longer run from Moscow" say the directors of the shipyards.

Perhaps the biggest change of all is that the power of the state has been replaced by the power of money. By the end of 1994 - 86 % of Russian industrial labour was working in the private sector.

Critics of privatisation programme say that it was done the other way round. Other countries have privatised their enterprises by restructuring them first and then selling them at the highest possible price to maximize gaining of profit for state and minimize risk for new investor.

In Russia enterprises were handed over to private subjects in exchange of worthless vouchers, leaving their new owners to get on with restructuring them alone.

This was a serious mistake in two expectations argue the critics. One, the state received no revenue and another - because Soviet economy was designed to minimize competition between producers the market got off to a poor start.

The industrial monoliths should have been broken up first so that price competition between their privatized subjects would lead to restructuring and a more efficient market.

APPENDIX 1

LIST OF PRINCIPAL INTERVIEWEES

Industry :

Mr. Leonid J. Zamachinsky	Managing Director JSC Yantar Pribaltic Shipyard
Mr Boris C. Kruth	First Deputy Director JSC Yantar Pribaltic Shipyard
Mr. A. G. Girencov	Economist Deputy Director
Mr. Siergiej Ksalnikow	General Manager Shiprepairyard Pregol
Mr. Pavel V. Bagencov	Chief Engineer Shiprepairyard Pregol
Mr. Eugenii Czereszko	Economist Deputy Director Shiprepairyard Pregol
Mr. Michail D. Samscnov	Managing Director Russian-Finland joint-venture "Marine Engineering Service".
Mr. Vladimir G. Krjuchkov	Managing Director Russian-Finland joint-venture "Marine Engineering Service"
Mr. Vladimir J. Denisov	Managing Director The Svetly branch of Russian-Finland joint-venture "Marine Engineering Service"
Mr. Nicolai N. Grifokov	Chief Engineer The Svetly branch of Russian-Finland joint-venture "Marine Engineering Service".

Counterpart :

Mr. Alexey Y. Ignatiev	Chief of Department Kaliningrad Regional Administration, Free Economic Zone "Yantar" Development Committee
Mrs Svetlana Frolova	Kaliningrad Regional Administration, Investment Department
Mrs Nadiezhda Klementsova	Kaliningrad International Business School

UNIDO :

Mr. Rudolf E. Mueller	Senior Industrial Development Officer, Institutional Support and Private Sector Development Branch, HED / ISP Vienna, Austria
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National and International Consultants of TF/RUS/94/001/11-57

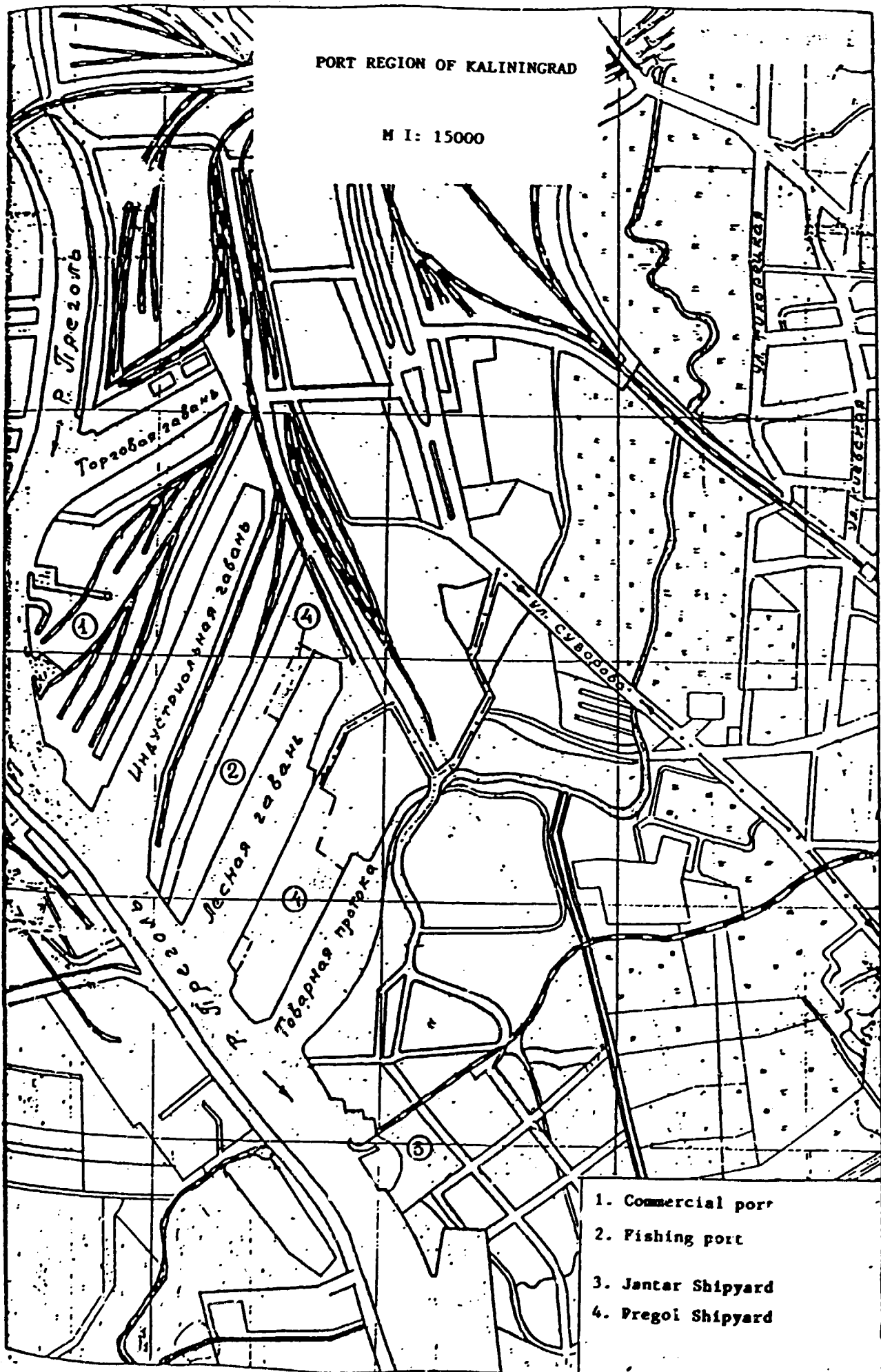
Mr. Sven Mauleon	Team Leader
Mr. Jakub Swieciski	Consultant, Investment Promotion
Mr. Alexander Barinow	National Consultant, Regional Development
Mr. Roy Liff	Consultant, Regional Development
Ms. Angelina Dolgaya	National Consultant, Light Industry
Mr. Iriy Zverev	National Consultant, Military Conversion
Mr. Christer Ekman	Consultant, Military Conversion
Mr. Lev Gik	National Consultant, Machine Building
Mr. P.J.S. Fordham	National Consultant, Machine Building
Mr. Igor Pritykin	National Consultant, Shipbuilding
Mr. Slawomir Dabski	Consultant, Shipbuilding
Mr. Alexander Alexeyev	National Consultant, Infrastructure
Mr. Rainer Folster	Consultant, Infrastructure
Mr. Valentin Korneevetz	National Consultant, Food Industry
Ms. Olga Radilnikova	National Consultant, Construction Industry
Mr. Bo Björk	Consultant, Construction Industry

Appendix 2

REVIEW OF INDIVIDUAL SHIPYARDS AND SHIPREPAIR YARDS

PORT REGION OF KALININGRAD

M I: 15000



- 1. Commercial port
- 2. Fishing port
- 3. Jantar Shipyard
- 4. Pregol Shipyard

THE JANTAR PRIBALTIC SHIPYARD

General Information.

The Jantar Shipyard covers 60 hectares of ground along the Kaliningrad channel about 12 km from the sea and was founded in 1860.

Organizational structure.

Joint-stock company with 51 % of the state shares property and 49 % shareholders.

Shipyard management: Director, Main Engineer. Deputy Production Director, Deputy Financial Director, Staff members about 200 persons.

Age structure: Directors over 60 years old, Deputies over 50 years old, remaining staff more than 40 years old.

Trade Unions are very strong and number 2500 persons.

Civil product range.

Starting from 1945 till April, 1992 shipyard was building war-ships and supplied nearly 97 merchant vessels, between others tug boats, salvage vessels, train ferries and general cargo vessels for carrying dry cargo for the Russian fleet.

Navy product range.

Under the Russian flag navigates the most modern frigate Nieustraszimyj (4100 t, 129 m, 32 knots) built at Jantar shipyard in 1986 - 1993.

Similar unit "Nieprystupny" built from 1989 was delivered in 1994.

The third ship from these series being built since 1990 and launched in 1993 still is not completed.

Frigate should get name "Tuman" but her name was changed to "300 Years of Russian Fleet" for the memory of 300 years

anniversary of creation of Russian fleet by tsar Peter the Great.

Status in employment.

	Quantity (persons)	Qualification head of department
Technological dept.	200	naval architect
Construction Dept.	114	eng.mechanic
Standarization dept	12	" "
Electric dept	300	
Shiprepairing dept.	100	

Several years ago there were 9000 employees. Presently shipyard employs 4100 employees from which 1800 in production and 600 in technical services

Volume of production.

Shipbuiding and shiprepair production for navy	35 %
Shipbuilding and shiprepair production for civil destination	45 %
Consumer goods production	12 %
Rest	8 %

Facilities.

The shipyard is equipped with three floating docks:

Number	Lifting capacity (tons)
1	12.000
1	5.000
1	1.000

Floating crane at lifting capacity 100 t and 4 slipways.

Size of the building vessel is limited by its width of 23,5 m.

Pier's cranes 60-90 t. lifting capacity.

Mechanical opt. cranes 5-30 t. lifting capacity.

Age of facilities and equipment.

70 %	up to 10 years
20 %	between 10-20 years
10 %	more than 20 years

Production range.

Shipyard's building offers comprises general cargo vessels, container vessels, coasting vessels, timber carriers, river-sea general cargo vessels, tankers.

The shipyard also carry-out shiprepairing works.

Production plan of the shipyard anticipates building of ten merchant vessels per year ,among others:

-timber carriers having 2600 DWT, 4 units for Russian shipowner Baltic Shipping Co., main dimensions:

l x b x t = 86,6 x 12,8 x 3,0 m at max. speed 12 knots.

-general cargo vessels having 9000 DWT capacity at main dimensions l x b x t = 137,4 x 21,5 x 9,22 m at max. speed 16 knots.

Marketing structure.

Shipyard's marketing office employees 7 persons with wide knowledge about international shipbuilding market

Its own broker office has been installed in Norway.

The shipyard has participated in Nordshipping Exhibition '95 where has displayed the export offers among others for small rescue boat. This project was the subject of interest of Norwegian customers.

There are also under negotiations or already signed contracts for following vessels:

- general cargo vessels of 12000 DWT 5 units (and option for 7 units) for the Estonian Shipping Co., considerable part of machinery and equipment will be from west manufacturers (Renk Tacke, Wartsila Diesel, Mac Gregor Navire, Liebherr and Blohm a.Voss)

-river-sea general cargo vessels for carrying dry cargo of 3070 DWT - 10 units. Main dimensions: l x b x t = 89,5 x 13,4 x 4,6 m, max. speed 12 knots - for German owner: Russochart Shipping GmbH.

Because of the construction changes the delivery time was fixed for the end of 1995. Total order will be completed in March of 1998.

The shipyard has recently signed an preliminary agreement with "Total Transportation System" from Norway for the same type of vessel.

-Within the scope of renovation of Russian fleet the shipyard is carrying talks with Ministry of Transportation for building of 5 tankers ,ice-breakers of 2500 DWT.

-In cooperation with Baltic Office of Sudoproject from St.Petersburg shipyard negotiates a contract for 4 product carriers of 12000 DWT.

-Container vessels of 12500 DWT. Number : 6 units for Maltese owner.

-General cargo vessels of 3500 DWT and price 6 millions of USD. Credit in amount of 10 millions USD is needed. Delivery time : 14 months from the date of contract signing. Customer from Great Britain is interested in this project.

Shipyard's construction office executes all projects of the vessels being built in the yard in their own scope.

- Fishing boats at 30 DWT for the Kaliningrad fishing collective farms. Cost of unit is 80.000 USD. The shipyard is ready to built 30 vessels per year.

- Speed boats aluminium hulls for German customer.

Other products range.

- Shipyard facilities are prepared to produce propeller shafts till 17 m length

- containers

-building of yachts

-construction of water bicyclets

-construction of stands for street selling etc.

Materials and equipment.

Steel plates for hulls are bought from Cheliabinsky Metallurg Plant and imported from Ukraina,Poland,Finland, Sweden,Austria,Denmark,Norway,Estonia.

Ship's equipment is imported from Sweden,Austria,Denmark, Norway,Ge. many,Estonia. Paints are bought in Western European countries.

Russian made equipment (anchors, rope blocks, ladders) is about 5-6 % of the whole equipment of the vessel. As far as radio-navigational and electronic devices are concerned it is a problem with indigenous equipment at high technical level. West countries installations are very expensive.

Environment.

The shipyard has got the certificate of the committee for Ecology from Kaliningrad Authority that its production activity is not harmful to the air and water of Kaliningrad region.

Remuneration structure.

Average wages level is 250.000,- to 300.000,- Rbs per month.

Technological level of production.

Technical level of shipbuilding production of the shipyard evaluated by the method used in Great Britain and United States is equal 2.0 It means that is lower than in most West European shipyards, where this level equal 2.5 to 2.9 .

The principal backward of the shipyard technological level is connected with relatively low level of the total of ship's equipment, mechanization of hull manufacturing process.

Computerisation of shipyard works.

Accounting system of the shipyard is completely computerised. The cost of computerisation of other works at shipyard is around 400 million Rbl.

Composition of income.

Sudden loss of the most important customer- navy and lack of payment for the delivered ships put shipyard in an awkward position.

As a way out of financial inconvenience should be conside-

red shifting to the civil production and export development. It is estimated initially that as the result of restructuring the value of orders booked last year will be at least doubled within next two years.

Restructuring and Marketing.

The way out from the actual situation shipyard see in:

- strengthening of marketing,
- restructuring
- expand of its own production.

As it enters the container age the shipyard is undertaking project of Russian-Italian joint - venture "Roscontainer" for construction of marine containers. Enterprise "Móheta" is shareholder from Italy. Scope of production for export and for internal market (per year) is:

20.000 containers

60.000 rolled sheets

5.000 pieces

Techno economic plan of undertaking has been already prepared. Estimate value of the project amounts to 76,4 millions USD. Execution of the project at "turn key" is performed by "Stalkonstrukcja" from Moscou.

-Joint-venture "Rosilta" has been created with Lithuanian firm in order to start production of wooden pannels which will be used to manufacture of various furniture.

-The pipeline facilities are going to be built together with "Baltrans Co"., Until recently, the oil was loaded from the Baltic ports of Tallin in Estonia Ventspils and Liepaja in Latvija and Klajpeda in Lithuania. 500 000 m.t. of fuel oil are delivered to the fleet annually. The Kaliningrad facilities are not adequate and an additional tank may have to be built.

Structure of changes.

According to the administration of the shipyard there are needed some changes.

First of all necessary is inflow of capital from abroad, secondly improving of skill of workers. Generally they have knowledge but there is shortage of information, lack of money.

THE SHIPREPAIRYARD "MARINE ENGINEERING SERVICE"

General information.

The shiprepairyard "Marine Engineering Service" is situated at the Pregola river on the territory of 17,8 hectares in the city of Kaliningrad.

Organizational structure.

Shipyard started repair fishing vessels in 1947 as state owned enterprise.

In 1991 it was created as the joint-venture of Kaliningrad branch of Russian-Finland Company "Marine Engineering Service".

Status in employment.

Shiprepairyard employs presently 650 persons what means decreasing around 50 % in comparison to 1991 when it was 1200 employees.

Specialization of labour is given below :

-Managing personnel	200 persons
-Technological and construction stuff	200 persons
-Labourers	250 persons

Employment of particular production divisions

-Hull division	30 workers
-Mechanical division	50 workers
-Tabeflexing division	30 workers
-Wood processing division	10 workers
-Electric division	45 workers
-Deck machines division	30 workers
-Painting division	50 workers

Production range.

Shiprepairyard repair programme contains mostly fishing and fish transporting vessels till 8000 DWT.

Productivity of shipyard represents 8-10 vessels to be generally overhauled per year.

14 vessels to be routine repaired.

There are presently repaired 2 fishing vessels and 2 general cargo vessels per year.

Facilities.

-Length of shiprepairing wharf	700 m
-Floating dock No.1	
lifting capacity	800 t.
dock length	80 m
-Floating dock No. 2	
lifting capacity	250 t
dock length	60 m
-One crane of lifting capacity	32 t
-Ten cranes of lifting capacity- each	16 t.
-Four cranes of lifting capacity - each	5 t.
-One floating crane of lifting capacity	25 t
-Stock of machine tools-60% of them over 20 years old.	
-There are two Japanese stocks at the size 100x50x9 m	

Restructuring and marketing.

Generally owners of fishing vessels prefer to repair their fleet abroad for example in Sweden, where they pay for repair services by caught fish which is sold even at half price.

In the frame of new activity shiprepairyard bought Italian machines and installed processing line of wooden pannels. They make pannels of natural wooden strips and join it with glue.

Pannels are used for production of different furniture as chairs, tables, beds, doors which are destined to equip vessel's superstructure and partially for the city population. Production of this wood division gives to the shipyard 10 % of yearly global revenue.

THE SHIPREPAIRYARD " PREGOL"

General information.

Shiprepairyard "Pregol" is situated in the south-west part of Kaliningrad at the left side of Pregola river, 2 km from estuary of Kaliningrad bay. Territory 13,44 ha in which fishery harbour 3,24 ha.

Yard was erected in 1959 for maintenance services and repairing of fishing vessels of state fishery enterprise .

Organizational structure

According to Decree of Russian President dated 1.07.1992 shiprepairyard "Pregol" was transformed into the joint-stock company. Status of 10th October, 1994 distributed shares as follows:

company	shares
- "Opoc " Co	72976
-Fund of national investment	44000
-"Re-Mo" Ltd Co.	5533
-Fund of property of Kaliningrad region	913
-private persons	128194

Management of the shipyard.

Management of the shipyard includes : general director, first engineer, energeticist, accountant and management of principal divisions.

To the shipyard administration also ranks technical and engineering stuff.

Total management composes of 118 persons as below:

Post	Quantity	Age	Education
General director	1	43 years	high level
Technical eng. stuff	82	18-60 years	high, secondary
Administration	21	18-60 years	High, secondary special
Service	14	18-60 years	high, secondary special

Production range.

The shipyard was first built in 1945 as workshops destined for repairing of the vessels between their trips.

In 1988 the shipyard operated at full capacity, working in 1,5 shift and the dock department in 2,0 shifts. There were 600 persons employed in production (total number was 1000 persons).

The vessels which are repaired now ranges from 300 tons to 8000 tons including capital repairs.

Overhauling capital and partial repairs shows in figures below list:

	1992	1993	1994
Factory trawlers and general cargo vessels	72	57	56

Status in employment.

Post	Quantity	Age	Education
Sailors	18	40-60 years	special secondary
Hull constructors	30	18-60 "	" "
Hull repairs	56	18-60 "	" "
Welders	39	18-60 "	" "
Electro and Radio Fitters, painters	30	18-60 "	" "
Millers	60	18-60 "	" "
Auxiliary divisions	126	18-60 "	" "

In 1991 there were 1000 employees.

Other production range.

-Machining - shaft line at diameter till 900 mm , length till 12 m, weight 25 t.

-Boring - machine elements till 600 mm diameter.

- Heat treatment and bending of pipes of ships systems.

-Welding and burning process metal surface treatment.

-Repair of electrical fittings (generators, board pannels, converters).

-At floating dock the following works to be done:

cleaning of underwater shell plating- work quality meet Swedish standard SA 2,0 - 2,5

-Painting by means of apparatus of non air spraying.

-Repairs of rudder line, screw, packing and shaft line test.

Medium time of repairing is 10-12 days.

Cleaning and painting of hull is 4 days.

Mooring trial and sea trial take place in specially constructed floating camera.

Prefabrication of hull parts (superstructure) are made in assembly house having 8-10 m of height, equipped with ventilation system, heating, sewage system and electric overhead travelling crane at 20 t lifting capacity. Total surface of steel processing plant is 27600 sq.m.

Facilities.

3 Floating docks.

Technical data	Building year		
	1976	1966	1963
Max. lifting capacity	4500 t.	2500 t.	900 t.
Length of deck	100 m	67 m	54 m
Width of deck	23,3 m	21,6 m	14 m
Draught at max. loading	10,8	10,58m	8,32 m
Cranes (2 pcs for each dock)			
lifting capacity	5 t	5 t	0,95 t.
crane radius	15 m	15 m	9 m
Max. dimensions of docking vessels			
length	130,91 m	85,2 m	
width	16,8 m	13,4 m	
draft	7,0 m	5,2 m	
Length of wharf, line			
Pier No	Length (m)	Cranes lifting (height (t & m)	
Pier No 29,30,31	390	32 /30	
Pier No 6	50	16/30	
Bridge crane of the docks	149	32/30	
Commercial pier	150	5/14	
Shiprepair pier			
1 line	238		
2 line	172		
3 line	90		
Total length	500 m		
Pier of merchandise harbour	430 m.		

Basin depth at pier 6-8 m
 Depth on sill 9-11 m
 Fitting of production and processing department

Quantity

1. For metal cuttings	160
2. Smithy and moulding press	37
3. Die costing machines	3
4. Woodworking machinesx	27

Technical data of same machine tools (treated elements)

diameter :	1250/900 mm
length	12 m
weight	25 tons

Turning and boring lathe

diameter :	2000 mm
hight	1250 mm
weight	3 t.

Milling machine

straight tooth	1200 mm
slant tooth 30°	1000 mm
40°	600 mm

Exploataion age 5 - 20 years

Marketing structure.

- Bunkering of the vessels with fuel, heavy fuel, drinking water.
- Loading and unloading of the vessels.
- hires out a part of its accomodation to Russian-Polish joint-venture company which deals with furniture production.

Heating and electric energy consumption.

Yearly consumption of electric energy - 16.500 KW.

Yearly consumption of heating 35.500 Gcal

Transport structure.

Transport department comprises 25 different automotive vehicle shipyard siding.

Spare parts for repaired vessels.

When vessels are coming to the shipyard for repairing they have to have their own spare parts for the ship's machinery and electro-navigational equipment.

Shipyard stores about 30 % of the necessary material for ship's repairing.

Environment.

Shipyard's production activity is under control of Kaliningrad Committee for Ecology. According to the certificate issued by the a.m. authority shipyard is not threatening neither to the air nor to the water of the environment of Kaliningrad region.

Shipyard has got the sewage treatment plant for biological treatment of waste water at the output of 100 cu m per h. Scrap material like steel, oil, grease, plastic etc. are handed over to the town cleaning plant.

Non ferrous metal is mostly melted at the shipyard's induction furnace.

Financial condition of undertaking in 1993.

Index	USD(million)
Balance-sheet profit	241,81
Tax exemption	3,45
Budget payment	178,20
Net profit	63,60
Debet due	174,55
Debet credit	157,90
Yearly turnover	633,89
Amortization	125,33
Uncompleted production	313,33

Investment project of Maritime Container Terminal.

MCT will be built along Pregola river, total pier length 500 m, depth 9,5 m.

Transshipment 1,1 million tons/year including 20 and 40 feet containers.

Cold store at capacity 1000 tons.

Ships till 7000 DWT will be handled by two cranes 5 t. and 20 t.

Business plan for MCT port

	worth in million USD		
	1995	1996	1997
Main instalation		16.556	24.834,2
Auxiliary instalation	133,7	1.294,4	5.131,9
Total	133,7	17.850,4	29.966,1

Gross value 47.950,2 million USD.

Selection of Kaliningrad, Pregole area for the future Maritime Container Terminal from Russian Balticports St.Petersburg, Byborg was imposed because it is open port.

Renumeration and competitors.

Competing small firms pay 1,5 - 2 times more than in the shipyard, so skilled workers (welders, electricians) escape to them. However it happens also that private enterprises as quick as they are created they sometimes more quickly go into bankruptcy and people come back to the shipyard.

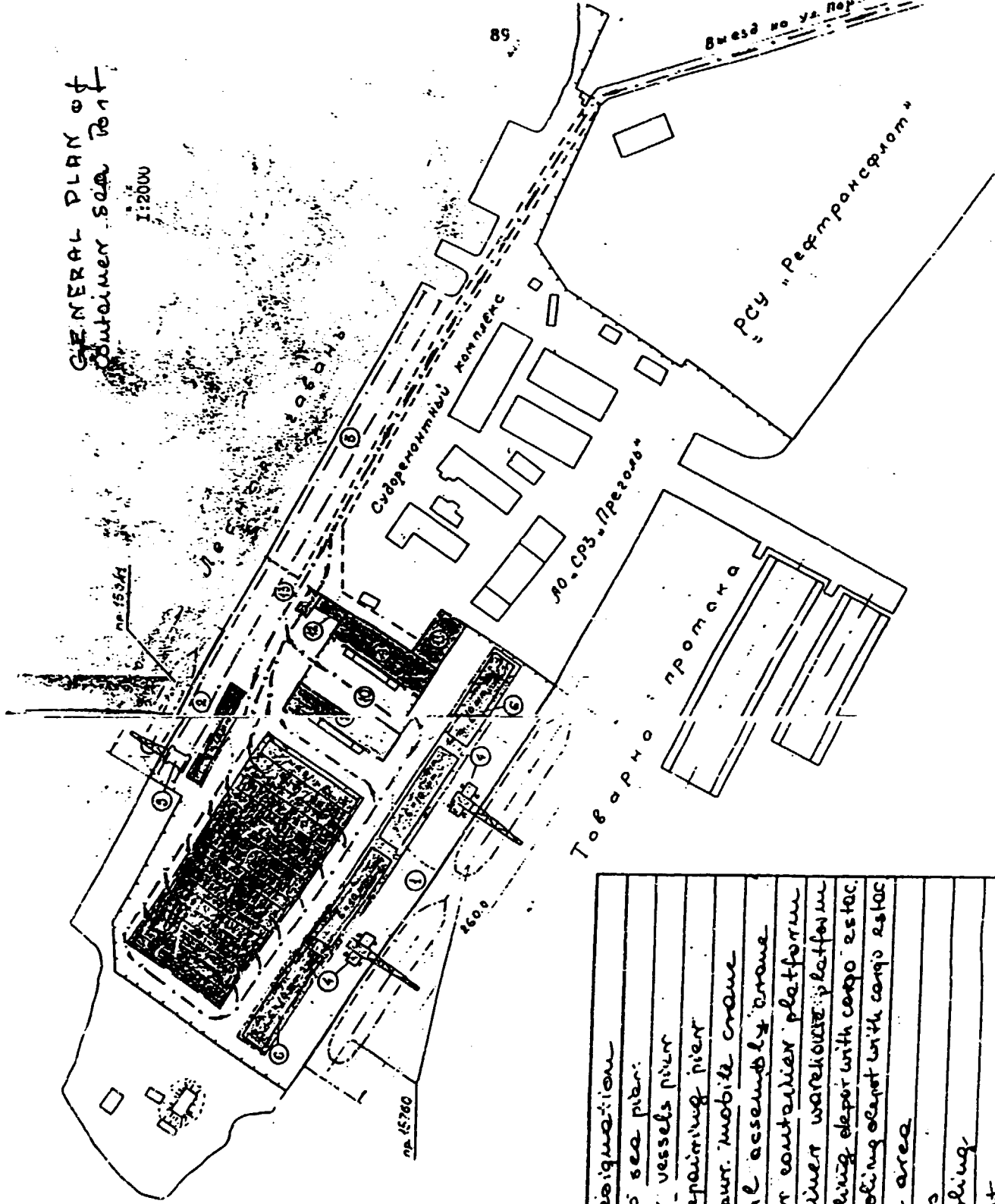
In spite of this crisis situation the management of the shipyard is not going to dismiss the high qualified employees (engineers, technicians) as to procure labour for favourable economic situation.

Productivity of labour.

Time of running repairs and between voyages of the vessels is two to three times longer than at West countries shiprepairyards.

GENERAL PLAN OF
CONTAINER SEA PORT

1:2000



№	Designation
1	Cargo sea pier
2	River vessels pier
3	Shiprepairing pier
4	Harbour mobile crane
5	Portal assembly crane
6	Buffer container platform
7	Container warehouse platform
8	Boarding elevator with cargo estac.
9	Boarding elevator with cargo estac
10	Open area
11	Offices
12	Building
13	Weight

THE SVETLY SHIPREPAIRYARD

General information.

The Svetly Shiprepairyard is situated at the bay of K  lningrad in the west part of Kaliningrad region. Yard occupy 50 hectares of premises with 740 m length of shiprepairing wharf.

Yard was erected in 1947 just for building of wooden fishing vessels and repairing different types of ships.

Organizational structure.

Shiprepairyard was transformed in joint-venture on 1991 as sister enterprise of Marine Engineering Service. Russian-Finland joint-venture.

Status in employment.

Total employees 590 persons including high skilled workers and engineers against 1600 employees in 1991.

Production range.

The shipyard has a wide experience in repairing ships type Atlantic and Super Atlantic built in Germany.

Facilities.

Ship-repairing wharf at length	740 m.
Ship-lifting lateral slipway "Abus"	
with hoisting capacity	900 t.
Floating dock, pier 949 , pier 945	
lifting capacity	4500 t.
dock floor length	101 m
dock floor width	21,6 m
keel track number	1 pce
dock crane-arm number and lifting capacity	1/5 pc/t

The yard is well equipped with wharf, cranes, docks, department dotted with machine tools and test stand of screw-rudder system in sea and mooring trial. Further development of shiprepairing is connected with initiation of new technology and materials when repairing of the vessel's hull is corresponding to the world's standard.

By this it is understood painting of the ship's hull, preparation of steel plates edges for welding and control of welding.

There are also tests to cut different material and steel by means of water stream with abrasive particles under the presser of 400 - 250 MPa what gives smoothly polished edges without thermal changes of structure and shape. The highpressure water stream with abrasive particles was applied for treatment of surfaces.

At the conservation-painting works it is used new kind of anticorrosion priming for protection of hull.

Instead of using so far priming on the base of zinc-silicon with contents 60 % - 70 % of zinc it is preferred to prime now with new generation of priming containing only 20 % - 30 % of zinc which is more resistant for high temperature of welding and fire cutting and increasing persistence of coating and is less harmful for welders.

On the built vessels just under the roof it can be used ethyl - siliceous priming (without zinc) which however do not secure three-months protection but it does not pollute the hull atmosphere.

Painting of hulls is made by sprayed method with application of automatic devices for shower and for leading nozzle over the painting surface so called painter robot just raised at hydraulic outriggers.

New production power should be engaged for floating dock in order to renovate it. About one milliard Roubles is needed for it.

Equipment	Quantity pcs	middle age	maker
Floating docks	2	22	Russian
Slipway 600 t	1	38	German
Lifting transporttation	120		
Cutting metal	170	22	Russian Romanian Jugoslav
Pres - forging	50	20	Russian
Welders machine	80	12	Russian Finland
Electrothermal	6	13	Russian
Woodworking machine	28	20	Russian

To fully charging of stock of machine tools, mechanical-assembling department and elect. welding it is going to develop building in series of ecological clean diesel-generators and variable hydraulic engines for thermal and electric energy production.

Cost and implementation of new technology is 200,000,- USD.

Volume of production.

Production	1992	1993	1994
Million of Rbls	1420	1250	1450
In units	cap.repairs 3 middle class 3	cap.repairs 3 middle class 3	cap.repairs 1 middle class 2
	dock repairs 50	dock repairs 30	dock repairs 60

Development of shipbuilding production is connected with the following works:

- reequipment of "Japan hull" at the surface of 2000 sq m
- reconstruction of transvers slipway "ABUS" for launching and hoisting of the ships at 600 tons.
- building of new hull is continued (construction of light elements) at the surface of 4000 sq.m and equipping it with cranes, welding and treating of metal stands.

Business plan of investment.

	million Rbl
Floating dock 4500 tons (renovation)	1.000,-
Building programme of bunkierking boats 800 tons	850 - 1200,-
DeveLopping of new diesel generation transversal slip	800,-
Pier for wood export	800 - 850,-
Container terminal	350-400,-
Floating gantry (2 pcs) and other equipment	2.000-2.500,-
Implementation of new technology	800,-

Wood processing line will be developed in order to export some mechanical working kind of wood having large demand abroad. Realization of this investment needs to be a pier of 110 m length rebuilt.

Dredging works at the pier have been already commenced.

In the close vicinity of this there is site of 4700 sq m surface where a new container terminal could be built.

It would be equipped with two floating gantry at hoisting capacity of 30 t. each and wood department with 5-6 sawing machines and woodworking machines.

It is appreciated that production capacity will be 40-50 cu m of treated wood for export yearly.

Reconstruction and modernization of existing woodworking shop with renewal of equipment permit to produce the furniture for internal market.

Other production range.

The shipyard continue the production of new -built vessels and for this aim there has been signed contract with private Co, "SAAMI". Contract provides building of series (4 units each) of fish processing ships and small stern trawlers designed for fishing at Barent's sea.

Documentation for factory vessels elaborates Inzgiprorybfiot from Nikolaiew and for stern trawlers Lituanian Institut from Klaipeda .

Financing of designing and building realization is supported by Co " SAAMI".

Marketing structure.

Under the negotiations is also order for bunkiering boats. Lituanian Institut of Fleet made an expertise of project water bunkiering ship at 300 t displacement and cod-liver bunkiering boat at 330 t displacement and limited navigation region. For the first vessel delivery time is 12 months from the contract signing and for the next units will be decreased successively.

Price estimation for one unit with devaluation is about 1 mld Rbl (with credit) and about 0,6 mld Rbl (without credit). Price of the standard vessel of this type is about 0,850 mld Rb (with devaluation and with credit) and 0,500 mld Rbl (with devaluation and without credit).

It is stipulated to secure the financing of this project from central allocation of resources and to build vessels of small tonnage for Russian fishing branch.



WE ARE LOOKING FOR PARTNERS:

On founding a joint venture in the sphere of:
ship-repair
shipbuilding
manufacturing of consumer goods
completing equipment production
production waste utilization including:
ship's insulation waste,
ship's furniture and timber waste,
-scrap

The necessary production areas and office rooms will be provided.

**SVETLOVSKY SHIPREPAIRERS
IS YOUR RELIABLE PARTNER IN FUTURE !**

TECHNICAL SPECIFICATIONS:

Ship-repairing wharf length, m	740
Ship-lifting slipway device, type "Abus", lateral, hoisting capacity, t	900
Floating dock, pr. 949:	
lifting capacity, t	4,500
dock floor length, m	101
dock floor width, m	21.6
keel track number, pc.	1
dock crane-arm number and lifting capacity, pc/t	1/5
Floating dock, pr. 945:	
lifting capacity, t	4,500
dock floor length, m	101
dock floor width, m	21.6
keel track number, pc.	3
dock crane-arm number and lifting capacity, pc/t	1/5



OUR ADDRESS: Svetlovsky Shiprepairers,
238340 Svetly, Kaliningrad Region, USSR
Phone: (01152) 22314

BE "814", V 1991.505-165.250.



• SHIP-REPAIR • SHIPBUILDING • MACHINE-BUILDING •

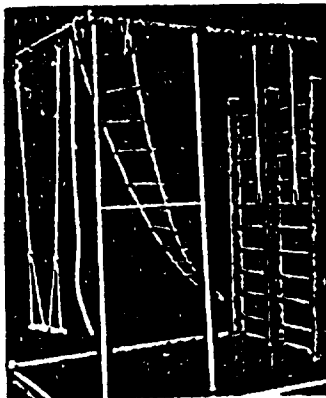


WE OFFER MODERN TECHNOLOGIES:

Simulation tests of the ship's power-propulsion plants
Rotary cutting by processing screw shafts and other parts of marine mechanisms and devices

**CONSUMER GOODS
MANUFACTURED BY THE WORKS:**

children's collapsible
table-chairs
children's sports
and games sets
manual winches
greenhouses



• SHIP-REPAIR • SHIPBUILDING • MACHINE-BUILDING •

WE BUILD:

bilge and sewage water collector ships
roadstead-harbour water bunkering boats
fish oil collector ships



96

WE MANUFACTURE:

flow railing chambers for testing the ship's main propulsion plant
separate ship's hull constructions

MACHINE-BUILDING PRODUCTS:

complete set articles for ships:
marine pulleys
marine thimbles
portholes
pipe butt connections





From small composite and wooden ships to fishing ships under repair, of various types, and of up to 500 t unloaded displacement, such is the way of development of the enterprise functioning as a ship-repairing plant since 1947.

The Svetlovsky Shiprepairers today is a modern enterprise equipped with necessary machinery and installation, its personnel numbers about 1600 high-skilled workers, engineers and employees.

The enterprise has a wide experience in repairing the ships type Atlantic and Super-Atlantic built in GDR.

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MAIN FEATURES OF THE ENTERPRISE PRODUCTION

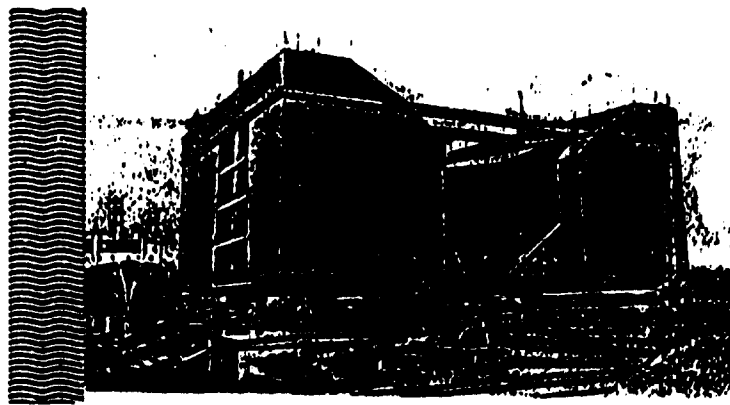
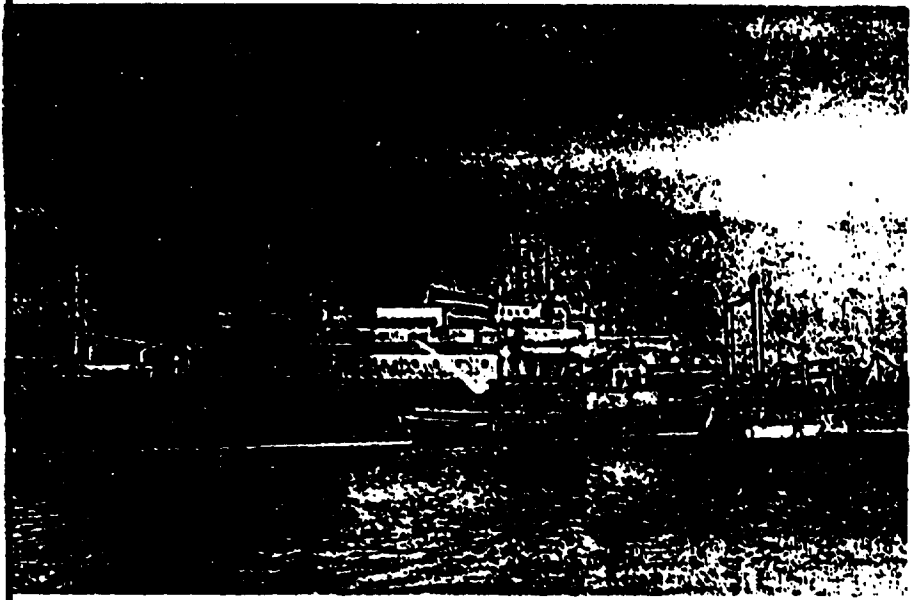
Repair and modernization of ships of up to 4,500 t unloaded displacement
Building of ships of up to 900 t unloaded displacement



OUR SERVICES RENDERED IN THE SPHERE OF SHIP-REPAIR

Performing current, docking and overhaul ship-repair
Maintenance of ships
Conversion and modernization of ships
Repairing of separate mechanisms and devices
Restoring of parts of ships technical aids

SHIP REPAIR AND MODERNIZATION OF SHIPS
SHIP BUILDING AND CONSTRUCTION OF SHIPS



The availability of the flow railing chamber for simulation tests of the ship under repair to combine mooring and performance trials without going offshore allows to raise reliability and to reduce costs of ship-repair.

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Appendix 3

BUSINESS MANAGEMENT

BUSINESS MANAGEMENT

General

Modern management is not administratively subordinated to the individual person or group of people but every employee of the factory is of great importance structural element of this organization.

He/she decides to some extent about company policy and its development.

It is innovation activity and such organization guarantees good cooperation of people. According to sociological tests it is of great importance the identification of the employee with group, the membership gives opportunity for personal ambitions and personality development.

Effectiveness of managerial labour.

Basing on the above effectiveness of managing work depends upon the following most important factors:

- to be in possession of actual knowledge - information coming from its own enterprise and external sources,
- to be a professional authority,
- to be competent person,
- skill to plan his own labour,
- knowledge of individual needs and desiring of subordinates,
- collaborators o whom it can be transferred competences,
- skill of prompt admission to mistakes and quick liquidation of consequences.

To develop creative activity of management is possible in situation when they can undertake independent decisions and lack of such rights damp and break their initiative.

Taking into consideration development in shipbuilding industry it is foreseen that costs of manufacturers will be determinated by cost of preparing of production.

In shipbuilding industry around 70 % of product costs will be expenditures for development investigation, projecting, technology and construction.

Of great importance will be management working on preparing of production. It will be necessary to have employees with experience and creative initiative to prepare this process.

This kind of activity is estimated in West Europe on 30 % while only 10 % in eastern countries.

In USA for example the creative initiative manifest people aged till 50 years. To introduce technical progress and scientific organization of labour there were actively engaged following employees:

- 15 % of age 19 - 25 years
- 22 % of age 26 - 30 years
- 33 % of age 31 - 40 years
- 29 % of age 41 - 50 years.

Shipyard management of privatised enterprises have to comply with the above results, if they want to use optimum experience of capitalistic economic system. Shipyard which postpone to introduce the innovation and technical progress cannot count on profit.

The most important matter when projecting organization is to define the strategy of enterprise operation. It can be once attitude to endure, other time for maximum profit or assure employees better conditions of payment and social profits.

In the shipbuilding industry good operation of enterprise is possible when the production is subject to alteration before it is backward.

In such a case the key position is the department of planning of product together with some of research-development centre.

To increase effectiveness of economy and trade it should be grouped the shipyard activities in sections, departments and cells adequate to the objectives and strategic tasks as it is shown below:

Table

Links between the number of instruction and their accomplishment in organization structure .

Number of instruction	Degree of realization in %	Degree of knowledge in %	Negative notice in %	Positive notice in %
58	46	49	54	18
30	69	78	36	41
12	92	97	21	74

According to this table the most effective system of information should filter and not multiply it.

It refers also to the selective distribution of reports i.e. to inform management only if there is something incorrect in the subject activity.

Appendix 4

SCRAP AND BUILT AIDS

SCRAP and BUILT AIDS

It can be arranged at the own shipyard which is usually connected with pollution of environment because of oil which contains cutting vessel's hulls.

There are also a lot of gases, dusts and other contaminations when cutting autogenous, electric-one or plasma arc.

Organization of such scrapping stand with all necessary environmental protection facilities is also costly.

A shipyard may resolve this problem in other way like one Ukrainian shipowner Azov Shipping Co. and Indian Maingi Maritime Consultants Pvt Ltd, from Bombay which created joint-venture company for scrapping of the vessels. They have their seat at Alang West Coast of India where is the centre of scrapping of vessels.

Maaz-Marine Pvt Ltd which is the name of new company (shares are divided 50 %/ 50 %) provides delivery of the vessels by Ukrainian side and cutting by Indian partner. Altogether there will be 80 vessels scrapped during 5-7 years period at Alang and in first stage it is 15 ships destined for this joint venture undertaking.

Building of Transeuropean Motorway North-South (TEM) linking Scandinavia and Baltic states through Gdansk to Mediterranean sea and further Istambul, Far East till Persian gulf will open opportunity for maritime economy of Kaliningrad region. There is possibility to extend branch motorway using part of existing international highway from Elblag to Kaliningrad.

Appendix 5

TO BUILD AND EXPORT NOTHING BUT HULLS

TO BUILD AND EXPORT NOTHING BUT HULLS

It is a "black work" and shipyard will work as "workman" as somebody says.

Opinions on this subject are divided. The building hulls are equipped in basic components.

Steel plates are already processed and built in a hull and sold at satisfactory prices. Shipyard could also fit out the hulls, but in such case somebody has to finance the works. Necessary is own extensive working capital, which any shipyard can dispose in excess. If the shipyard takes expensive bank credit, its service could absorb all profit and even some losses could be noted.

An outfitting cycle is long and equipment comes from many auxiliary industries.

As far as hulls construction is concerned its building cycle is half a time of ship's erection. During this time can be done working documentation and steel materials ordered.

Time is money and shortened building cycle makes possible that the same working capital can be used to finance construction of more vessels and to escape from expensive credits.

There are more and more competitors on the market like Rumanian, Chroatian, Ukrainian who use dumping prices. Shipowners can give such examples of low prices and try to make price blockade.

To be competitive on the market and win with competitors a shipyard should fulfill customers requirements as follows:

- quality of the works ,
- punctuality of the order.

A shipyard will be obliged to adapt the technological process to the new exigences and change a way of thinking of personnel taking into consideration the west customers requirements.

Shipowners pay most attention to the welder and priming-painting works. Well cleaned, properly primed and painted hull gives guarantee that the vessel will longer navigate without necessity of its docking. It costs a lot of money and shipowners do not want to loose it.

Therefore necessary is control of each stage of works.

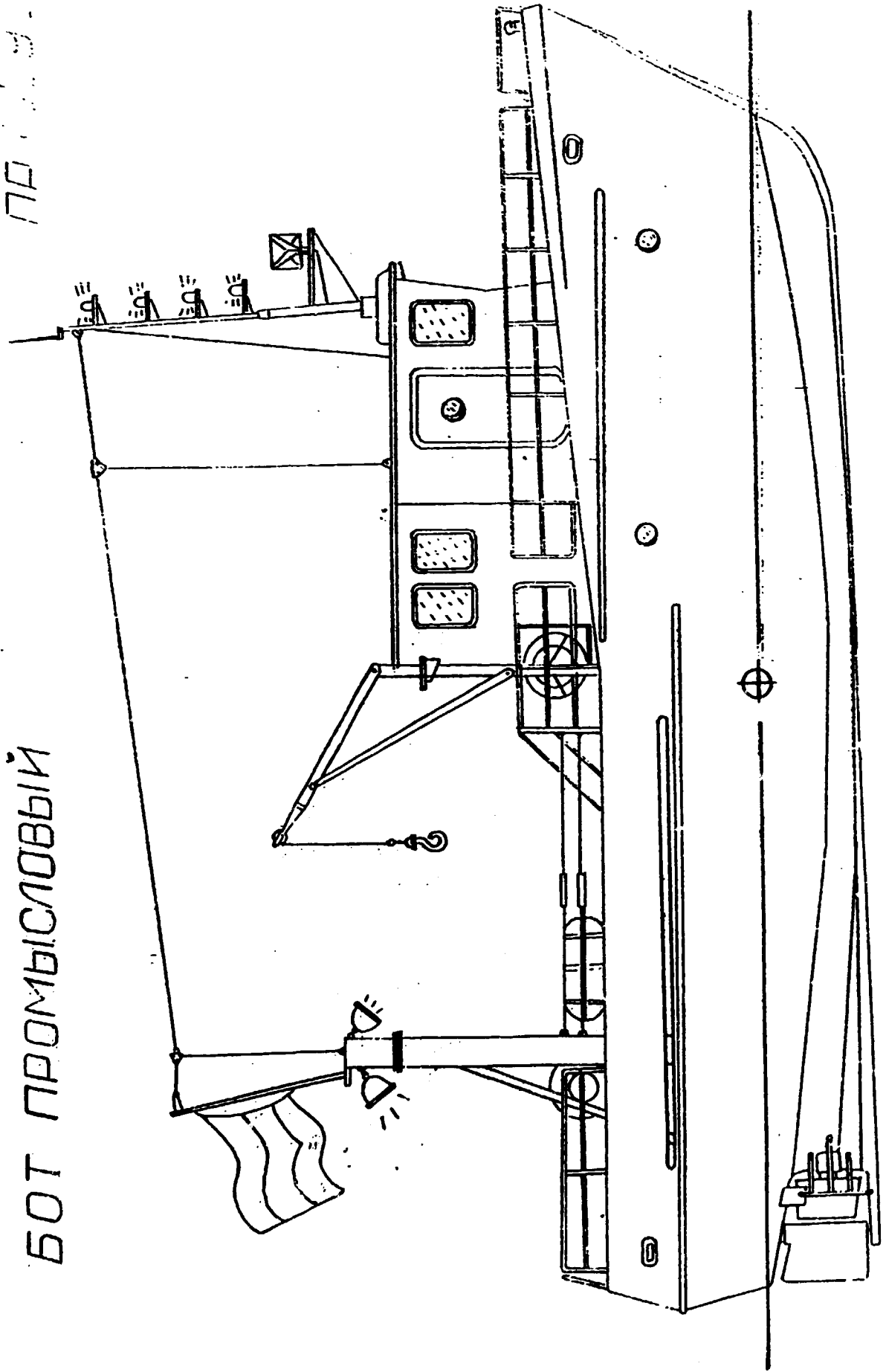
At first cleaning of plates than measurement of each putting priming layers. Priming-painting works takes 10 % of hull building cycle.

For realisation of such tasks necessary are not only finances, technology or materials but also welders, hull assemblers and painters.

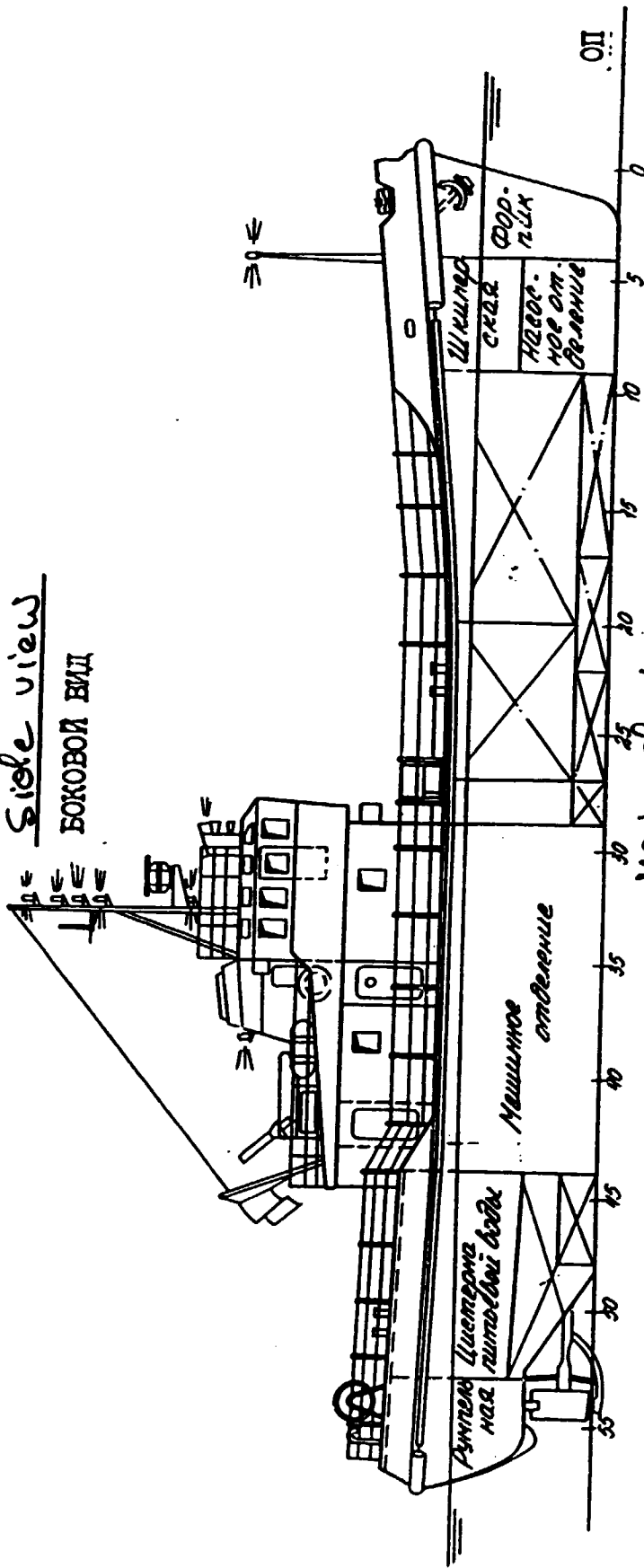
Industrial boat

БОТ ПРОМЫСЛОВЫЙ

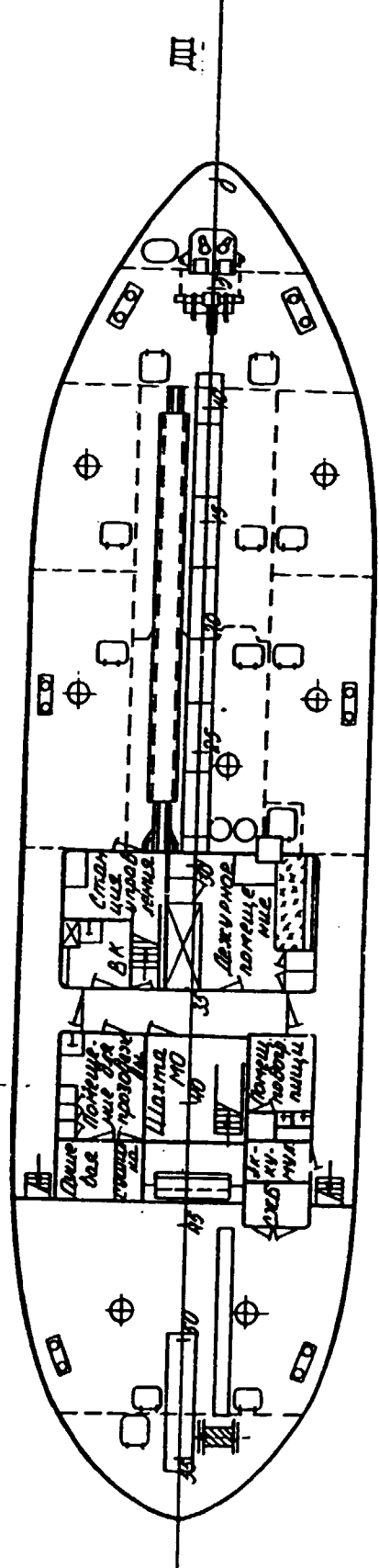
ПА 7009



Side view
БОКОВОЙ ВИД



Main deck
ГЛАВНАЯ ПАЛУБА



HARBOUR TANKER-WATER BOAT

РЕЙДОВО-ПОРТОВЫЙ ВОДОНАЛИВНОЙ ПЛАВБУНКЕРОВЩИК
мощностью 165 кВт (225 л.с.) г/п 255 т
пр. 1582У/10

Назначение: прием пресной воды на береговых объектах, бункеровка судов в порту и на рейде.

Класс Регистра СССР: КМ ⚓ Ш ЛЗ (водовоз)

Автор проекта: КО Гипрорыбфлота

Завод-строитель: Светловский СРЗ Минрыбхоза СССР

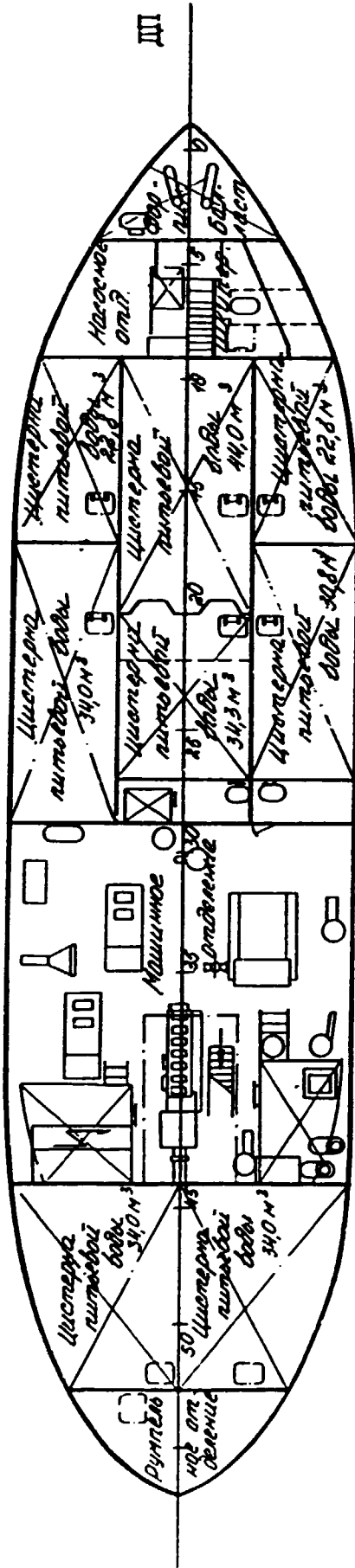
Год постройки головного судна: 1989 г.

Символ типа судна: ПБР 165 кВт (225 л.с.) пр. 1582У

Источник сведений: спецификация № 1582У/10-901-003

Орел deck plan

ПЛАН СО СНЯТОЙ ПАЛУБОЙ



III

