EUROPEAN UNION - TACIS

Technical Assistance to the Southern Republics of the CIS and Georgia - TRACECA

TRADE AND TRANSPORT SECTORS

Terms of Reference

for

PORT NETWORK PLAN AND IMPROVEMENT PROGRAMME

RENOVATION OF THE FERRY TERMINALS OF BAKU AND KRASNOVODSK

Final Recipients:
TRACECA Region Ministries of Transport

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TACIS - TRACECA PROGRAMME

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RENOVATION OF THE FERRY TERMINALS OF BAKU AND KRASNOVODSK

1. INTRODUCTION AND BACKGROUND

The Port of Baku is the main sea-port of Azerbaijan. It occupies a key strategic commercial position on the Caspian Sea. The port has excellent rail and road connections for passengers and cargo into and out of the countries of the Caucasus region. The port of Krasnovodsk, in the vicinity of the town of Turkmenbashi, is the main commercial port of Turkmenistan on the Caspian sea. It is linked to it's Central Asian hinterland by the major road and rail systems of the region. The link between both Caspian ports ensures the connection between the Caucasus countries and the countries of Central Asia. The majority of the cargo shipped in both ports uses that link. It is a key element in the TRACECA corridor (Transport corridor Europe-Caucasus-Asia).

For yet unknown reasons the water level in the Caspian Sea is rising at an average annual rate of some 25 cm during the last years. This phenomenon commenced in 1975. The alarming rise in the Caspian Sea level creates major difficulties in operating the ferry service. The ferry terminals in both ports will to be out of service within some 3 years if the sea level continues to rise. Parts of the ferry terminals are in a bad condition and need major rehabilitation.

The Baku - Turkmenbashi link is a typical short sea link. Hence it is advantageous, as present practice, to use facilities that do not need transhipment. First priority should be given to the rail ferry link, for this reason. This ferry link can transport both trains and trucks. The other port facilities in both ports also need rehabilitation. However, their reconstruction should be planned within an overall master plan, taking into account future needs. When the present transition period, following independence, is stabilised, and when the transport facilities again take increasing amounts of cargo, it is

anticipated that the ports will generate sufficient income to finance these extra renovation works. Thus their debt level will be kept within reasonable limits. The growth of the petroleum industry allows optimism.

The majority of the cargo between the Caucasus region and Central Asia used and still uses today the ferry service between Baku (Azerbaijan) and Krasnovodsk (Turkmenistan). There is an ongoing shift from 100% rail transport to shared rail and road transport. The rail ferry takes trucks and wagons.

The ferry terminals of both Baku and Krasnovodsk have been designed by the "Kaspmorniiprojekt" institute in Baku. This institute has designed many port facilities in the F.S.U. (in the Black Sea, the Baltic Sea, the Pacific Ocean, the Caspian Sea). Since the dissolution of the Soviet Union and the creation of the new independent states, the institute has suffered considerably by loosing the major part of its customers and work load. However the institute still possesses important historical data. Kaspmorniiprojekt prepared in 1988 an overall plan for the reconstruction of Baku port. As the sea level is still rising, this project needs to be reviewed.

Against this background the Governments of Azerbaijan and Turkmenistan obtained technical assistance from the European Commission under the TACIS - TRACECA programme for a survey of the Caspian Sea water level rise and its influence on the operating conditions of both ports. The project included a survey of infrastructure in both ports and an attempt to forecast the future traffic flows. This technical assistance was carried out by the group of consulting engineers Sofremer, HPC and Deti. The final report was issued in July 1995. The study confirmed the urgent need to rebuild the ferry terminals in both ports.

The European Commission committed itself under the TACIS - TRACECA programme to prepare the redesign of the ferry terminals in both ports and to prepare the international tender documents for their reconstruction. The present terms of reference deal with this study.

Since the dissolution of the Soviet Union, all ports of the New Independent States have to work in a new, free market oriented environment. The new environment has forced and still forces the ports to adapt new policies and work methods, and to think

commercially. The Caspian Sea crossing part of the TRACECA route has now to compete with other land traffic routes.

The TACIS - TRACECA programme includes a project of technical assistance and training for the port of Baku, aiming to strengthen the port's management in tackling the new challenges. At the moment (September 1995), this project is tendered out and offers are expected soon. A comparable project is in the pipeline for the port of Kasnovodsk. Implementation should start end of September or early October 1995. This latter project is prepared by the EBRD and financed by the American Aid.

Most probably, the construction of the two renewed ferry terminals will be financed by loans from international institutions or banks. Part of the present project of rehabilitation of both ferry terminals consists in allowing both port management teams to evaluate the financial feasibility of designs the Consultant prepares.

The project beneficiaries are the future Owners of the terminals, i.e. Baku Port Authority for the Baku terminal and Krasnovodsk Port Authority for the Krasnovodsk terminal. In this document with Consultant is meant the successful consultant company that wins this tender.

2. OBJECTIVES

The first objective of this project is to safeguard the ferry link between Baku and Krasnovodsk against the threat of the rising sea level.
The second objective is to renew and modernise these facilities for further use.
Both terminals are incorporated in one project for several reasons.

1. The present terminals are of the same design and the same ships berth at both terminals.
2. It is expected and hoped that the design of two twin terminals in one contract will result in a better and more economical solution for the ferry link.

The project contains four phases:

First phase: Definition of the design parameters
During this phase, the Consultant must define the design parameters and have them approved by the Owners and Tacis.
Parameters that need to be defined cover aspects of port operation during construction and after the works, geotechnical aspects, seismic activity, capacity of the new terminals, sea levels to be taken into account, maximum slopes, type of ships, the interface between ship and ramps, access roads and tracks, need for storage areas and sidings, electricity supply, use of standards and codes of practice, etc.

Second phase: Design of the ferry terminals
In this phase the Consultant must design the new port works and discuss them with the Owners and Tacis until agreement is reached. This phase ends with the production of a detailed bill of quantities and a budget for the works.

Third phase: Economic and financial evaluation
In this phase, the Consultant's design is tested on its economic and financial merits in the macro economic environment. Credible high and low growth scenarios are to be assumed, compatible with the international financing institutions. A financial plan is to be prepared covering the depreciation period for all elements of the proposed investments in works and equipment. The Port Authorities are to carry out these evaluations with the full support and help of the Consultant.

It can be that the above mentioned evaluations force the designer to adapt his design to more acceptable economic and financial projections.

This phase ends with the presentation of design and supporting documents to an international financing institution for further action.

Fourth phase: Preparation of international tender documents

In this phase the Consultant prepares the international tender documents according to the standards of supporting financing organisations. The documents include the specification of all civil works, electro-mechanical and other equipment, sufficiently in detail for procurement by tender.

3. SCOPE OF WORK.

General aspects

In the design of ferry terminals the skills of a specialised designer of port infrastructures and that of a shipbuilding engineer must meet together.
The Consultant must provide during phase one and two the services of at least one experienced port design engineer and of one experienced shipbuilding engineer. Also, the input of a railway specialist, having experience with the Russian railway system will be required.

Phase three needs the input of a senior economist and experienced in economic and financial investment appraisals, preferably in the environment of the states of the former Soviet Union.

The drafting of international tender documents for the terminals is the job for an experienced expert in that matter.

The Consultant must be in close contact, throughout the project, with the port authorities. All the official documents, the Contractor has to prepare for this project, need the approval of the Owner (Baku Port Authority for the Baku terminal and Krasnovodsk Port Authority for the Krasnovodsk terminal) and of Tacis. The Owners and/or Tacis may seek advice of any organisation, private consultant or ministry to assist them on this matter. The approval of any document does not free the Consultant from his responsibility as designer.

All documents shall be prepared in English and Russia.

First phase: Definition of the design parameters

The design and tender documents must respect the following main design characteristics and boundary limits:

- Two ferry boats must be able to berth (as the present situation).
- During the construction of the new terminals one vessel must always be allowed to berth.

- The new facilities must be able to accept the existing ferries as well as new ferries of the same type.
- The terminal shall be designed to accept rail wagons as well as road vehicles (trucks and cars).
- A possible maximum sea level, to be used for the design, might be -24 and a possible minimum sea level -29 (reference is the zero of the Baltic sea). However, the Consultant should investigate the matter with existing documentation, form his personal opinion on the matter, discuss the question with the relevant authorities and get approval.
- The Consultant shall take into consideration that working at minimum sea level might need substantial deepening of the sea bottom.
- The approach rail tracks and roads must be designed at least 1.7m above the adopted maximum sea level. This minimum level of tracks and roads is to be proposed by the Consultant and to be approved by the Owners. It must take into account possible overtopping waves during storms.

Detailed geotechnical surveys have been done in both ports for the design of the previous ferry terminals and for other infrastructures in both ports. The reports of these surveys are in the archives of the Kaspmorniiproject institute and are available. The existing terminal structures are founded on driven piles. Since these surveys (in the sixties) there might be an accumulation of mud mixed with oil products on the sea bottom. The existence of such layer and their thickness has not been investigated as yet. There is need for a sound geotechnical dossier to allow a sound and economic design. It will be one of the major tasks of the Consultant to study existing data, to prepare a list of missing information and to organise and realise a survey and laboratory testing that produces the missing data. In his offer, the Consultant must make a suitable proposal for the survey and subsequent laboratory testing.

Every year, a bathymetrical survey is done in both ports. The results of these campaigns are available. In Krasnovodsk, at regular intervals, dredging works are needed.

Data on wave climate at the terminals is equally available in both ports.

The existing port structures show important corrosion. This proves the corrosive character of the Caspian Sea water. The Consultant shall investigate this aspect and define appropriate design parameters. The projected physical live of the new structures is 50 years. They should remain in good functioning order throughout that period, providing regular maintenance is done.

Together with the port authorities the Consultant shall define the operational parameters. The list below is not complete. Additional items can be added by the Owners or by the Consultant.

- Implantation of the new terminals.
- The capacity of the new terminals
- Kind of ships to be used.
- The levels of the access roads and rail tracks.
- The operating levels of the ramps.
- Maximum scouring depth to be taken into account in the design.
- The maximum admissible slopes of the ramps.
- Details of the interface between ship and ramp.
- Arrangements during construction, to keep the port and the ferry terminals working.
- Parking capacity needed for waiting trucks and cars.
- Rail sidings needed for waiting wagons.
- Electricity supply.

Typical design parameters such as design earthquake intensity, standards and codes of practice to be used etc. shall be proposed by the Consultant

This phase ends with the issue of a report that summarises the set of parameters and boundary conditions, to be used for the design.

The Owners and Tacis must approve this report.
If needed, the Consultant has to change these parameters until he, the Owners and Tacis are satisfied. However, the Consultant should bear in mind that he is responsible for his design of which these parameters are a key part.

Second phase: Design of the ferry terminals

The Consultant should endeavour to reuse in its new design as many parts of the existing facilities as physically possible and economically reasonable.

The design includes the following (non restrictive list) items:

- The access roads and rail tracks to the ferry terminal inside the fenced harbour area.
- The rail sidings needed for accommodating the queuing lines of waiting wagons.
- Parking areas for accommodating queuing trucks and cars.
- The defence of the shore against sea attack of the ferry terminals and the accesses.
- The access ramps, including electro-mechanical installations and power supply.
- Fendering system and devices for the ship-ramp connection.
- The sea bottom stabilising and scouring prevention layer.
- Auxiliary devices such as bollards, etc.

The design should be sufficiently worked out in detail for:

- Allowing international tenders.
- Allowing execution of the works without supplementary design work, except for the preparation of workshop details of the steel structures and detailed rebar lists. The principles of the steel structures and rebar arrangements are part of this scope of work of these TOR.
- Allowing to prepare an accurate and detailed bill of quantities.
- Allowing to prepare a realistic budget.

The output of this phase is to include preparation of a set of drawings and associated calculation notes. A separate set of these documents must be made for each terminal

On the basis of these design documents, the Consultant prepares a detailed bill of quantities and a budget. Prior to the budgeting exercise, the Consultant shall investigate the level of unit prices in the area for internationally tendered works. Aspects such as availability of aggregates, of cement, of reinforcing steel, cost of manpower, transport costs, cost of travelling and of accommodation, etc., influencing considerably the price levels need investigation.

This phase ends with the approval of the designed budget

Third phase: Economic and financial evaluation

The macro economic analysis assesses the benefits of each terminal, compared to the situation without the investment.

The construction of the new terminals will probably be financed by an international financing institution or eventually by an international bank. In order to facilitate negotiations for there financing, the attractiveness of both projected new terminals needs to be shown. Financing partners in the projects must gain the necessary confidence. The Port Authorities, helped by the Consultant, must estimate the running cost and the income of each terminal during its economic lifetime (25 years) and with the present level of tariff. Other possible sources of income and costs related to the terminal are identified and quantified. Based on this information, they assess the internal rate of return (IRR).

An assessment shall be made by the Port Authority, helped by the Consultant, of the burden of repayment of loan on the budget of the port. Income taxes, taxes on foreign exchange and other taxes and levies are to be incorporated in this analysis as well as possible government subsidy. Special attention shall be paid to the relation between the foreign exchange cash inflow, the expenditures in foreign exchange, the taxation and conversion obligations and the repayment of the new loan and of loans of the past.

The Consultant foresees a liaison person between the Owners and himself who is familiar with appraisal of investment programmes and with the accounting system in the countries of the former Soviet Union. He must assist both Port Authorities in the analysis.

It can be that the financial evaluation forces the designer to adapt his design in order to improve its financial appeal.

This phase will end with a design, supporting by the documents, that can be presented to international financing institutions for further follow up and action.

Fourth phase: Preparation of international tender documents

In this phase the international tender documents are prepared according to the standards of supporting financing organisations.
Provisionally, the Consultant can refer to the FIDIC system for execution of works as framework for the preparation of the international tender documents.

The system and the timing of advance payments and payments to the Contractor need the Consultant's special attention. It should allow the Contractor to limit the pre-financing of the project to reasonable limits. It should assure the Owners that the works will be finished according to the quality and quantities defined in the documents. A balanced equilibrium must be achieved.

4. EXPERTS, DURATION, TIME TABLE OF THE PROJECT AND REPORTING

The Consultant will present the following information in his offer:

- The names and job-titles of staff to be made available as well as their position within the firm, with a detailed CV and description of their experience, including recent experience in countries of the Former Soviet Union.

- A work programme covering the periods of time during which each expert will be allocated to the project.

- A work plan and a bar chart covering the input of experts, his methodology and the expected results of the four phases of the project.

The total project time should not exceed 12 months.

The Consultant will present in his offer a work plan and a bar chart covering the input, methodology and expected results for the four phases of the project. Between the phases, time should be allowed for discussion and approval of documents.

The Consultant will produce the following reports:

- A report after the first phase, giving the design parameters, calculation methods to be used and boundary conditions of the design for each port.

- A set of design drawings and calculation notes for each port after the second phase.

- A report giving the financial analysis, made by the Port authorities and monitored by the Consultant, for each terminal, after the third phase.

- The complete tender dossier for each terminal after the fourth phase

For each report an executive summary will be made.

All reports and documents will be submitted for approval to the Port Authority and to the TACIS - TRACECA staff. English is the language of the contract governing the Consultants work and all reports and documents shall be issued in English and in Russian. Total number of reports and documents shall be 10 in English and 10 in Russian.

5. LOCAL STAFF

The selected company shall make arrangements with local bodies, organisations or consultants' firms, and with individual interpreters according to its needs.