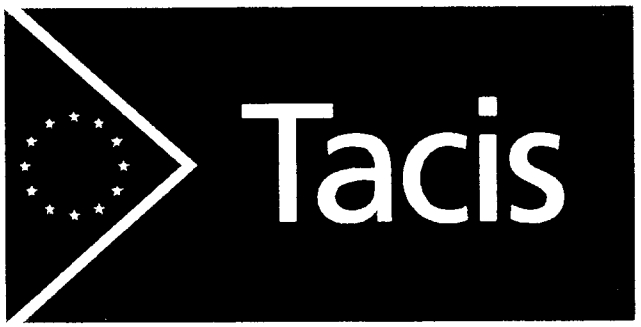

Azerbaijan Railways Restructuring

Final Report, volume 3
Experts' Commentaries

February 1999

AZERBAIJAN RAILWAYS

INSTITUTIONAL AND MANAGEMENT

REORGANISATION

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This project is financed by the European Union's Tacis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia.

1 INTRODUCTION

This report presents proposals for a new operating concept for the ADDY (Azerbaijan Railways) designed to improve its performance and efficiency over a period. It will be necessary to adjust the system to bring it into line with the demand and to concentrate on the types and volumes of traffic, which the railway can handle most economically. Substantial investment will be required to upgrade the system and its infrastructure.

1.1 State/Railway relationships

1.1.1 The need for external restructuring

The report proposes a reorganisation of ADDY. This will not, however, be sufficient to prepare the present railway administration of Azerbaijan for the future challenges. As was the case with railways in most Western European countries Azerbaijan Railways need entrepreneurial autonomy in order to survive and perform well in the arising national and international transport market. This can only be achieved if the relationship between the state and ADDY is completely reshaped. We call this the external reform of ADDY. A number of good reasons can be given to the Government of Azerbaijan why the ongoing discussion of the draft for a new railway law should be used to get the reshaping process started.

At the moment Azerbaijan Railways

- Established as a state enterprise with its own charter
- Works to old Soviet norms
- Lacks autonomy
- In addition to rail transport is a provider of social services-education, hospitals.
- Lacks entrepreneurial spirit
- Provider of uneconomic passenger services

1.1.2 Appraisal of present situation

1.1.2.1 Need to save public money

Azerbaijan is a country trying hard to develop its economy and the living standard of its population. In order to achieve this, capital investment is necessary. As money is scarce it must to a certain extent come from abroad. As the experience in other parts of the world has shown railway restructuring and streamlining can essentially reduce the financial burden on the government (and the tax payer) and set free capital that might be used to develop the railway system faster or spent for other purposes.

1.1.2.2 Need to attract private capital

It would also be a benefit for the government budget if private capital could be attracted to investing into some of the rail activities. Prerequisites for interesting private capital are efficiency and business profitability or at least a solid prospect for it. There are doubts that this exists at the moment as there are question marks about micro-economic profitability of some parts of ADDY's traffic. Private risk capital cannot be attracted as long as ADDY is maintained as a government administration.

1.1.2.3 Role of banks

Generally development banks will lend money to organisations if they are satisfied that that there is a sufficient return on investment and the investment meets the strategic objectives in the development of the economy of the country. In relation to state organisations banks will

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want to see organisations restructured to compete in a market environment. In essence it is necessary to show that the enterprise will be sustainable into the future.

1.1.2.4 Present monopoly position of ADDY will not last

The present monopoly or Azerbaijan Railways will not last as the Azerbaijan market economy develops.

The present situation could lead the transport policy deciders in Azerbaijan to the conclusion that external restructuring of ADDY is not urgent. It is true that ADDY has not only a rail traffic monopoly, but a factual monopoly at least in the sector of long distance traffic in general. While it has not been possible to determine the exact market share in the transportation of freight traffic it is likely to be over 80%. This means that it can hardly be spoken of as a transport market in the sense that there is real competition between the modes with regard to quality and price, as is the case in all West European countries. For many international freight transports the railway is presently the only possible mode.

However, the situation will change in the coming years. Market economy will be introduced, road infrastructure will improve essentially under the pressure of the owners of private cars, and the emerging freight truckers will take advantage of this, and as the experience with other countries of the former Soviet Union shows real competition for the railways will arise.

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It is therefore in the interest of the Republic of Azerbaijan that ADDY as an energy-efficient and environmentally-friendly means of transportation with an extremely high rationalisation potential, will be prepared for the coming changes. It is an advantage that this has not to be done in a rush but in carefully planned steps and the present strong position of ADDY can be used to consolidate the future. Restructuring has to start now.

1.1.2.5 International dimension

Most of the issues that impinge on the relationship between state and the railways are common throughout Europe in particular. Therefor a lot can be learned from the experiences in these countries. In making proposals for Azerbaijan railways one must be conscious of the culture and legal requirements of the country.

The railways in Azerbaijan form a vital link between east and west and vice a versa. The route between Baku in Azerbaijan and Poti in Georgia represents the main TRACECA route from Central Asia and China to Europe and connects with the EU CORRIDOR No 4. While connections to Armenia are currently closed due to the political unrest hopefully this will be resolved in due course.

Railway transit through Azerbaijan will have more competition by other modes and by routes through other countries. In order to survive on this difficult market it will not be sufficient to offer a high technical standard in the fields of infrastructure and rolling stock. Also a customer-oriented and service-minded high quality organisation will be needed to an extent which can in no way be ensured by a government administration. The globalisation of competition is not confined to the industrial section but also to the service sector of which ADDY is the main player. This does not allow for the postponing the necessary reform.

The railways are lucky at the moment in having a reasonable infrastructure in place (although it needs substantial investment) and it will be a number of years yet before the road infrastructure improves sufficiently to offer serious competition.

1.1.3 Policy Issues

Comparing the present situation of ADDY with the objective of transforming it into a commercially oriented, market-driven and financially self-sustaining organisation it is evident that a certain number of issues have to be solved in the restructuring process.

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1.1.3.1 Harmonisation of competition

It is in the state interest to have competition in the transport sector in such a way as hidden subsidies are eliminated and that there is a "level playing field" for all transport modes.

This is particularly true for road and rail. The cost of road infrastructure is often carried and hidden in a central budget, and is not recovered from trucks, cars, and buses which use the road infrastructure. On the other hand the cost of renewing, and maintaining the railway infrastructure is clearly identifiable and is charged in full to the railway. This is a matter which should be addressed taking into account the external costs of both road and rail transport modes.

1.1.3.2 Government managed enterprise

The experience in the countries of Western Europe with a tradition of state owned companies and heavy state participation in the economic activity of the country has shown that in the long run this is not only very costly but also very often inefficient. State run enterprises have enormous difficulties to compete with private ones in the deregulated market. That is why there should be a decisive move towards separating economic activities as strictly as possible from true government functions such as ensuring fair competition on the market, safety control, regional development, social welfare etc

1.1.3.3 Incompatibility of government's and railway's interests

The hierarchical subordination of the railways under the government can lead and mostly does lead to management decisions that are not compatible with the entrepreneurial, particularly commercial, interests of the railways, which will have to obey the rules of the rising transport market.

1.1.3.4 Public service obligations

One of the objectives of the state should be to ensure the continuing availability of passenger services at an affordable price in certain circumstances. The service should be provided in a cost effective way in order to reduce the drain on public funds, and could include railway services.

This PSO (public service obligation) is typically represented by an obligation to provide adequate capacity on specific routes with a specified frequency and quality of service Public service obligations (for example extremely low tariffs) are imposed on ADDY in the general interest of the country but financially they are not always sufficiently compensated.

This doesn't make it a priority for ADDY to invest into certain services and the result can be a reduction of quality and therefore, at least potentially, a decreasing quantity of transport services. In the long run such a policy can show disastrous results for the railway enterprise.

1.1.3.5 Price controls

If no or only limited competition exists for the provision of services under a PSO it is normally agreed with by the Regulator (this position will be dealt with later in the report.).

This level typically allows the operator to cover his costs and make a modest profit. It would be to the advantage of the operator if he or she could improve productivity thus reducing the cost and increasing profit.

If the price level does not allow the operator to cover the costs and it cannot be raised for social or other reasons then it is traditional practice for the state to reimburse the difference so as to allow the operator to deliver the service.

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1.1.3.6 Human resources

Over-staffing has been a major problem of most railways all over the world. ADDY is not an exception. As mentioned earlier in this report both passenger and freight traffic have drastically decreased since the breaking up of the Soviet Union. Freight has reduced from 37,000 billion ton km in 1991 to 3,500 billion ton km in 1997, while at the same time staff levels have only reduced by only 5 thousand in the operating divisions of the railway (27,000 to 22,000 approx) and nearly 10 thousand overall (48,000 to 38,500). Although this traffic decline seems to have come to a halt in the recent past, and although international freight traffic particularly has started to grow again to an encouraging extent it would be an illusion to think that, under normal circumstances, figures of former decades could ever be reached again.

As the cost structure has not followed the decline of traffic and revenue, all necessary and possible measures to adapt the railway organisation have to be undertaken. Next to the other restructuring measures, staff reduction has to go on as staff costs represent a large part of the total cost of the enterprise.

It must be recognised that the management of ADDY have recognised this problem and have made substantial progress in solving it. Schools (primary), medical facilities, and other non core activities have been transferred to other agencies and negotiations are in hand for the transfer of some Construction Units to Municipalities. Canteens and retail outlets are being privatised so it can be said that that the railways have made a good start.

It must be recognised, however, that in the present economic and social situation of Azerbaijan and according to the consultant's experience with other countries, it is impossible to take measures, which are too radical in this respect. On the other hand this social problem cannot be left as a burden solely on ADDY because the real cost structures would be falsified in that case, and for a commercially-acting corporation there is nothing worse than lack of transparency and unjustified over-costing.

This is not helped by the present law which, allows staff to work after they reach the age of sixty if declared medically fit. This situation is encouraged by the fact that state pensions are currently very low in Azerbaijan.

In reality it is the task of the state to deal with this social problem, and if the state wants to use ADDY as an instrument to solve it then this is a good example for a service in the public interest which, has to be compensated financially by the Government. On behalf of the state, ADDY can and should of course put up a program of financing early retirement, training and retraining etc. and contribute actively to further possible solutions. But if the new corporation is to be given a fair start, it must be done without this financial burden.

As a means for solving the overstaffing problem we recommend that the railway continues its ban on recruitment and the introduction of a voluntary redundancy program.

The consultants acknowledge the railways efforts in this regard in introducing part time working and unpaid leave.

With the introduction of new technology it will be necessary to retrain existing staff in new techniques. On the other hand it is acknowledged that existing staff cannot be completely retrained and that in certain sectors, as for example in information technology, young specialists may have to be hired. Therefore we advise that exceptional recruitment must remain possible but must underlie a precise justification procedure with at the end of it the agreement of the highest possible authority.

In dealing with this question of staff reduction consideration should be given to the privatisation of some enterprises of the railway which might be able to compete for work outside the railways thus increasing employment even though it is outside the railway.

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1.1.3.7 Third party access

In a market economy third party access is an essential element of competition. It is therefore necessary to allow third party access for train operation on the railway infrastructure. Any new legislation proposed by Government should take cognisance of this.

This would allow private or state owned companies to operate their own trains and compete with ADDY for business competitive pressures, cost reduction and innovative ideas may result in reduced transport costs to the customer.

1.1.3.8 Role of freight forwarders

It is understood that most traffic movements with an international dimension is organised by freight forwarding enterprises and this role has passed from being operated directly by the railways to private limited companies. These play an important role in developing business for the railways, and is an example of part privatisation. The number of freight forwarders operating will ensure a competitive situation.

1.2 Privatisation or corporation

The further development of ADDY and the reshaping of the relationship between ADDY and the Government will have to take place within the larger environment of Azerbaijan's situation in general and its economy in particular. This environment has to be reform-friendly. In other words, it would be premature to push ADDY into an isolated privatisation process without having similar development in the other branches of the economy. Its backbone economic activities are presently to a very large extent government driven and controlled. This is the reason why out of the three options

- retain present arrangement,
- privatise the railway and then make it efficient,
- make the railway efficient (corporitise-joint stock company) and privatise it perhaps at a later stage.

It is recommended that the third solution be adopted i.e., the corporatisation of ADDY as described later.

1.2.1 Joint stock company

It would appear that the most likely choices for the railway is to become a division of the Ministry of Transport (yet to be established) or a Joint Stock Company. For the reasons outlined previously the consultants recommend the creation of a Joint Stock Company as this will allow them to carry out their business in a commercial fashion without direct Government interference.

Initially this should be wholly state owned but elements within it could be privatised and private participation and investment should be welcome.

As previously stated it is the consultants strong opinion that the infrastructure should remain state property for the foreseeable future.

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1.3 Proposals for a new State/Railway relationship

1.3.1 Existing situation

As was the case in West European countries before the restructuring of their railways it seems that the Azerbaijan Government plays a multi-functional role vis-à-vis ADDY, namely as

- the requirer of services of public interests from the railway;
- the owner of the railway
- approves ADDY's capital needs;
- the political institution getting involved in railway matters on behalf of the general interest of the country.

These four functions are carried out arbitrarily in daily administrative management. The result is a lack of transparency in the relationship between state and railways, which makes it difficult to fix business responsibility, and prevents a clear answer to question whether ADDY as a whole or its individual performances are micro-economically profitable or not. It also bears the heavy risk that public money is wrongly allocated.

The existing relationship between state and ADDY should be changed in the sense that entrepreneurial and state functions should be clearly separated and excessive involvement of the state in the business management of railways eliminated.

1.3.2 Future role of government

The future role of Government initially would be that of

a) the owner, of the railway enterprise (not the operator which will be operated under commercial principles)

b) the railway sector supervisory authority, particularly concerning safety, guaranteeing fair competition between the modes, licensing railway enterprises and deciding on transport policy in general,

c) the purchaser of all services which are in the global interest of the Republic of Azerbaijan and defined in private law contracts between ADDY and the purchasing bodies,

d) the provider of finance for the investments into the transport infrastructure of the country on an equal basis for all transportation modes.

It is also recommended that not all of the remaining state functions should be performed by the same government body, like for example the proposed Transport Ministry, but by several.

Thus

a) should be in the responsibility of the State Property Ministry (or similar),

b) in that of the proposed Transport Ministry,

c) in that of the bodies deciding about services in the general interest, like the Ministries responsible for social welfare, defence, regional development etc. using their own budget respectively for the purchase of the services, and

d) in that of the proposed Transport Ministry and the Finance Ministry.

1.3.3 Role of the state with respect to infrastructure

The railways are of vital importance to the economy of the country. The railways forms the main transport link between east and west and will in the future become more important as traffic to and from Central Asia and China develops.

For these reasons it is the consultants view that the infrastructure should always remain the property of the state.

The state will keep a public service responsibility in the field of infrastructure investment. It is recommended that the Government - according to the budget possibilities and the criteria of fair and equal treatment with respect to other modes - will assist in financing ADDY's investments into infrastructure.

1.3.4 Fair competition

At present the Government is responsible for the development of the road system in Azerbaijan. It seems only logical that in the in order to provide fair competition that the Government should have the responsibility for developing and maintaining the railway infrastructure.

Part or all of the cost of this investment should come from charges, which would be imposed on the railway operators as will be described later.

All other investments, particularly investments locomotives and rolling stock, should be financed by ADDY itself.

When creating the new Railway Corporation it has to be made sure that the Government as the owner not only provides for a good legal basis start but also for a healthy capital basis which will permit a normal investment policy.

1.3.5 Regulation of the Railway

Nowadays most of the World's Railways are regulated and supervised by a Railway Department in the Ministry of Transport. It is recommended that the Government of Azerbaijan give consideration to the setting up of such a Division having the following primary functions:

- supervising public safety in railway operations by establishing a railways inspectorate with right of access to inspect the railway infrastructure; the inspectorate to request where necessary the State to make regulations relating to the public safety of railway operations;
- entering into agreements with ADDY and other railway operators for the discharge of Public Service Obligations (including free and concessionary travel) on a contractual and commercial basis;
- entering into a performance agreement with ADDY and monitoring compliance; in this connection it is believed that if ADDY exchanges its monopoly for a system of ongoing performance agreements (with appropriate adjustments mechanisms for accommodating unforeseen circumstances) greater trust will be established in the relationship
- specifying the form of accounts to be maintained by ADDY and other reporting requirements;

Other government ministries may be responsible for

- undertaking the function of price control, where the protection of customers in monopolistic situations is necessary;
- entering into agreements with ADDY on the maintenance and specification for development of the infrastructure and the cost and time within which this will be done;

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1.4 Internal re-organisation of ADDY

1.4.1 Introduction

The re-structuring of ADDY cannot be achieved satisfactorily unless a new management organisation structure is put in place. The present organisation has served the railway well over the past few years since the break-up of the former Soviet railway system in laying the basis for a separate independent national railway administration of Azerbaijan.

As has been underlined there are many reasons plead in favour of adapting the existing organisation to future needs and challenges. ADDY must urgently be made more efficient and customer-oriented, must reduce its production costs, and reach a higher degree of transparency in its decision making process in order to be prepared for the rising transport market in an increasingly deregulated economy.

It is generally considered desirable to have separate funding, accounting and management for infrastructure, which is seen as a public-funded asset, in the general interest.

There is a need for greater commercial freedom and separate accountability in the provision of passenger and freight services.

There is a growing trend internationally to consider third party access to national rail systems. Although this is unlikely to be a short term requirement for ADDY, it can be considered as a real longer-term possibility, given the increasing volume of international transit traffic through Azerbaijan, and the general tendency of replacing monopolies by competitive systems leading to cost reducing pressure as well as better performance and innovation.

1.4.1.1 Managing the railway restructuring process

Railway restructuring involves fundamental change and involves a commitment from the top down. The fundamental change requires an organisation capacity to learn quickly and to work in an uncertain and challenging environment.

Participative management creates an environment where change becomes the norm. This process of change must continue in parallel in all areas of the business.

1.4.2 Present organisation structure

The present organisation structure of ADDY is characterised by a strict top down management.

1.4.2.1 Director General

The railway organisation is formally headed by the Director General who co-ordinates the different services. The Director General is appointed by the Cabinet of Ministers with the agreement of the President. The organisation is based on a purely functional basis with over fourteen people reporting directly to the Director General. Some of the more important administrative units are as follows.

- First Deputy
- Deputy Economics
- Deputy Technical
- Deputy State Security
- Deputy Personnel
- Deputy Passenger

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- Traffic Inspection
- Locomotives
- Legal
- General Inspection
- Secretary
- Finance
- Material
- Asst Director General
- Baku Wagon Works

The present organisation is a traditional functional type with the advantages and disadvantages associated with it. It is largely influenced by the existing state-railway relationship.

There is significant scope for rationalisation of activities and functions within the present structure. Re-organisation can, above all, lead to more transparency in the management process and define responsibilities better. The establishment of a new relationship between state and railway organisation as proposed above is, however, a prerequisite for a successful re-organisation.

Though the organisation of ADDY could be significantly improved, while retaining a functional structure, we do not consider that this approach would be sufficient to meet the coming needs. The proposals for a new organisation are based on a new type of structure, which will provide a firm foundation for the future development of ADDY.

1.4.3 Organisation principles and trends

1.4.3.1 Functional organisations

Traditionally railways all over the world have in the past organised their management structures on functional principles. This involves grouping activities according to their different functions. A functional approach to organisation has also been common in many other types of enterprise. Manufacturing companies, for example, frequently organise their activities around marketing, engineering, production and finance.

The functional principle of organisation is a well proven management system. It provides for strong centralised top down management and control as is presently the case with ADDY. It makes efficient use of people and their specialised skills, and facilitates training and development of staff. It provides a logical basis for allocation of separate functional responsibility.

However, a functional-type organisation structure also has certain disadvantages which become all the more evident as well defined business responsibility decides about success or failure in a market driven economy. Functional departments can become too focused on their own speciality and fail to act in a way, which achieves the overall objectives of the enterprise. Departments can become over-specialised, uncoordinated with other departments and resistant to change. Only the Chief Executive can in that case be held responsible for profit performance, and this is an unnecessary and inconvenient high level of hierarchy.

1.4.3.2 Strategic business units

In order to overcome the disadvantages of the functional type of organisation, many enterprises now organise their management structures on the basis of product or service. The Chief Executive can delegate responsibility to product managers whose units are largely functionally self-sufficient and who can therefore carry real profit responsibility. The contribution (in profit or loss) of individual products or services can be more readily identified at corporate level.

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There is a more recent development of the product-type organisation, which has proved very effective. This involves the creation of Strategic Business Units (SBUs) within the enterprise. SBUs have their own product or service line, have their own marketing, sales and production, their own regional and local management representation, with real profit responsibility. They develop their own missions and goals, within the framework of the corporate mission, and prepare their own strategic plans. SBU managers are expected to have the drive and entrepreneurial skills of the manager of a private business.

1.4.3.3 European trends

Many railways all over the world are re-organising at the present time. Most and not only in Western countries are moving away from functional organisations to a greater or lesser extent. Great Britain has established separate private companies providing the various services.

Sweden has transferred infrastructure to a separate state administration, and the rest of the railway is divided into business units covering passenger and freight operations, rolling stock maintenance and property.

Both the Netherlands and Spain are moving to a structure based on strategic business units, one each for the passenger and freight businesses, infrastructure, rolling stock maintenance, and property. The Director General co-ordinates the activities of the business units, supported by a small headquarters group.

Germany has restructured its railways in a similar way; from 1998 the business units will be developed into separate limited stock companies co-ordinated by a management holding company; it has opened the infrastructure for third parties that have the same rights and obligations as the national railway's own freight and passenger business units.

1.4.3.4 Management of change

Current management practice suggests that the decision making process be devolved down the organisation to the lowest possible level. This sometimes causes concern particularly at middle management level who may sometimes feel that they are losing power. As far Azerbaijan Railways are concerned this management of change and culture may in fact be its greatest challenge. To be successful it requires to be driven from the top and requires the commitment of all.

1.4.4 Proposed internal organisation structure

1.4.4.1 Overall structure

A proposed new organisation structure chart is shown in the annexes. It is based on the principle of separate Business Units for passenger and freight services which are the main commercial activities of ADDY, with strategic service units provided in both the rolling stock and infrastructure areas.

In addition an ancillary strategic business unit to look after all non core activities is proposed. This would include the Baku Wagon Works, Ballast Plants, Construction Units, Reinforced Concrete factory which could at some future date be privatised.

There is also provision for the establishment of a Corporate Services division which would supply services to the Strategic Business Units.

1.4.4.2 Strategic business units (SBUs)

The separate establishment of the Infrastructure Business Unit will introduce costing transparency in this sector and will facilitate potential third party operator access in the future. It is proposed that many functions be devolved to the SBUs; however there are other tasks which should be retained at ADDY headquarters outside the Business Units because they can

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be provided centrally more economically and effectively, or because they are essential to enable ADDY to operate as a single corporation. For this purpose it is recommended the establishment of a unit for Corporate Services.

Business Units should be responsible for its own marketing and sales, be they performed within or outside the corporation, for the operation of its services, the management of its own staff and its own accounting and controlling. This will create specific cost consciousness, will allocate profit responsibility to each Business Unit for the services it provides, and also give control over the resources it needs to achieve profitability.

Each SBU will operate very much like a private commercial company. The guiding principle for a new organisation structure in detail must be that the Business Unit Management has a maximum influence on the development of costs related to its performance output.

Another leading principle to be applied is that decisions should be taken as far as possible at the level on which the value is added.

1.4.4.3 Supervisory board

The new proposals call for the setting up of a supervisory board. This board of directors would be appointed by the government (as the shareholder) and generally consist of about ten people who would have a variety of skills including business people, an accountant, a person with marketing skills. These would be all non executive directors.

traditionally in western europe the chief executive and director finance also sit as members of the board but we understand under present legislation this may not be possible in azerbaijan. It is also common to have trade union representation on the board.

1.4.4.4 Executive board

It is proposed that each of the Business Units, the Service and Headquarters Units be led by a Director. These six Directors under the Chairmanship of the General Director, will constitute the Executive Board. The Executive Board should meet regularly in order to co-ordinate the activities of ADDY.

The Executive Board - chaired by the Director General - will be the supreme executive organ responsible for overall direction of ADDY in accordance with the corporate mission, strategy, policy and budget as established by law or as agreed with the Cabinet of Ministers.

The Executive Board will co-ordinate the activities of the Business Units and the Services Units, monitor their performance and take corrective action where necessary.

1.4.4.5 Corporate service unit

The services which we propose to be grouped in the Corporate Services Unit are

- Corporate Planning,
- Finance & Controlling,
- Computer Systems,
- Procurement and Real Estate.
- Organisation,
- International Relations,
- Human Resources,
- Legal Services and Audit.

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1.4.4.6 Freight business unit

The Freight Business Unit will have its own marketing and planning, sales, stations as well as operating and technical, finance/controlling/administration and human resources functions with corresponding managers. It will develop and sell freight services in the national and international markets.

It will employ, manage and develop its own staff. It will prepare its own financial plans and budgets, and define its products/services. It will operate as a self-contained business with profit responsibility, within the overall corporate goals and strategies of ADDY, and in collaboration with the other Business and Services Units in ADDY.

The Unit's main functions will be :

- transport of goods in a safe, reliable, cost effective and profitable manner
- fixing of tariffs and rates
- development and marketing of logistical systems
- expansion of transit traffic and liaison with foreign customers, shippers and ports
- development of combined transport
- management of the assets like stations and freight terminals
- purchase of traction and wagon maintenance from the Director Rolling Stock.
- purchase of train paths from Director Infrastructure
- purchase of services from Director Corporate Services
- realisation of financial and other targets set down at ADDY corporate level

The proposed organisation structure for the Freight Business Unit is shown in the annexes.

1.4.4.7 Passenger business unit

Like the Freight Business Unit, the Passenger Business Unit will be independent and self-contained. It will be structured in a similar way with managers responsible for marketing and planning, sales, stations, operating and technical, human resources and finance/controlling/administration.

The main functions of the Passenger Business Unit would be :

- provision of cost effective and safe public passenger transport in the form of long distance (national and international) and commuter service with the goal of profitability
- ticket pricing and fare structure
- development of attractive future-oriented services for passengers
- management of the assets, particularly the passenger stations
- management of coach fleet
- purchase of traction and coach maintenance from the Director Rolling Stock.
- realisation of financial and other targets set down at ADDY corporate level
- purchase of train paths from Director Infrastructure
- purchase of services from Director Corporate Services

The proposed organisation structure for the Passenger Business Unit is shown in the annexes.

1.4.4.8 Infrastructure business unit

It is proposed that all infrastructure activities and functions should be grouped together in an Infrastructure Business Unit. This will facilitate separate accounting for the infrastructure and its separate funding from public sources and thus make it much easier to prevent cross-subsidisation between the different functions in the Corporation. This is very much in line with international trends whereby the provision of the infrastructure is seen, on principle, to be a

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public service in the same way as is available for the competing modes. This facilitates an equal treatment of all modes and thus permits harmonisation of competitive conditions. When making contributions to the funding of transport infrastructure the state has the possibility and the obligation to take account of the social costs (pollution, accidents, energy provision etc.) caused by the different modes. It can support investments into the infrastructure of those modes which produce advantages for the country as a whole.

The establishment of a separate Infrastructure Business Unit will also facilitate charging for use of the infrastructure and access of third party operators, if that is considered desirable at some time in the future.

The Infrastructure Business Unit will be self-contained with its own managers for planning and for sales of train paths, for path management and operating, construction, track maintenance, signalling and communications, human resources, and finance/controlling/administration.

The Infrastructure Operations Manager will carry responsibility for central dispatching, controlling track capacity and train running for both passengers and freight. He will be responsible for the overall timetable and will have a neutral position with respect to selling train paths to the Freight Business and Passenger Business Units of the Corporation or to third party operators.

The main functions of the Unit would be :

- provision of a safe, high quality infrastructure system
- maintenance of the system in the most cost effective manner
- development of an infrastructure plan and of the corresponding implementation strategy in harmony with the ADDY overall corporate plan
- marketing of train paths with the minimum goal of covering the infrastructure costs not taken care of by government's public service obligation payments
- realisation of the financial and other targets set down at ADDY corporate level

The proposed organisation structure for the Infrastructure Business Unit is shown in the annexes.

1.4.4.9 Rolling stock service unit

We propose the establishing of Rolling Stock Service Unit, which will carry out maintenance and overhauls for the Passenger and Freight Business Units on locomotives, passenger carriages, and freight wagons. It will operate as an autonomous enterprise with its own technical, workshops, accounts and human resource managers. It will negotiate contracts for the supply of maintenance services to the Passenger and Freight Business Units.

The option should be kept open for the Rolling Stock Unit to own rolling stock, which it would then lease to the Passenger and Freight Units to other licensed operators.

The Rolling Stock Unit will be encouraged to provide engineering services to third parties on a commercial basis. There should be potential for expansion of profitable business, especially from industrial railways and other adjoining railways.

The principal functions of the Rolling Stock Service Unit will include:

- major maintenance and overhaul of rolling stock, including locomotives (electric and diesel), passenger carriages and freight wagons;
- contract with Passenger and Freight Business Units, and third party customers where profitable, for major maintenance, overhaul and other engineering services;
- development of best practice methods, systems, equipment and workshops for engineering work;
- management, training and development of staff;

- achievement of financial and other targets set by Rolling Stock Unit and approved by Board of SR.

It is proposed that the day to day maintenance, fuelling, and valeting will be carried out by the freight and passenger business units.

The proposed organisation of the Rolling Stock Division is shown in the Annexes.

1.4.4.10Corporate services unit

The Executive Board of ADDY - chaired by the Director General - will have overall responsibility for the performance of the Corporation and the co-ordination of the Business Units. The Board and its individual members as Directors of their respective Business Units will be assisted in their tasks by a Corporate Service Unit, which will also be headed by a member of the Board. This Unit will supply services that are more economic to provide centrally rather than be duplicated in each of the Business Units, or that are necessary for ensuring the unity of the Corporation.

It is proposed that the Corporate Services Unit will be responsible for :

- Corporate Planning, which will draw together the plans of the Business Units, ensure that they are in harmony with overall ADDY objectives and with each other, and present the overall ADDY corporate plan. Included in this function are economic studies and forecasting
- computer systems, information technology and data network services
- finance and controlling, providing financial accounting, budgeting, treasury and funding services, monitoring of capital expenditure
- procurement which will set the purchasing procedures for all Business Units, and carry out purchasing of designated items
- real estate which will develop property and optimise use and financial return on ADDY properties
- development of the overall organisation structure of the Corporation
- international (bilateral and multilateral) relations including memberships of ADDY in international organisations, translating and interpreting functions
- human resources, setting overall ADDY policies and procedures on Human Resources, and providing central pay negotiations, training and other services
- legal services, ensuring compliance with all legal requirements and providing contract drafts
- internal audit, providing internal financial monitoring and ensuring the integrity of ADDY's systems and procedures
- spokesperson press and public relations, which would include close liaison with press radio and television, and be the railway on matters of public interest. Establishing corporate identity of the railway and the publishing information etc

The proposed structure for the Corporate Services Unit is shown in annexes.

1.4.4.11Ancillary services unit

It is recommended that all non–core ancillary services such as hospitals and schools be transferred out the railway to more appropriate Departments of Government. It is understood that this process is underway at present and the railway is to be commended for its initiative in this matter.

The railway was in the past described as a state within a state offering railway personnel and their families a variety of benefits and services Withdrawal of any of these services should be done in a caring and sensitive manner.

Of course it will be necessary to make wage adjustments.

The opportunities for setting up the ancillary business will increase as time goes by and enterprises such as Baku Wagon Works, Ballast Plants, Reinforced Concrete factory, should be included in this area of responsibility.

1.4.5 Other services

1.4.5.1 Manager safety

Safety of operations is the first priority of any railway. It must be able to carry large numbers of passengers to their destinations safely. Despite any financial or competitive pressures safety cannot be compromised. For that reason and also to give the necessary high profile it is recommended that the position of Manager Safety should report directly to the Director General. It is also envisaged that Manager Safety would be responsible for environmental protection.

1.4.5.2 Secretariat of Director General

We propose that the Head of Director Generals Secretariat - directly subordinate to the DG - will have the following main functions :

- Support the Director General in his co-ordinating activity within the Board
- Support the Director General when representing the Corporation outside
- Ensure smooth and effective functioning of the Board
- Co-ordinate the activities of the assistants and secretaries within the Dg's Secretariat
- Advise the DG and the other members of the Board in matters of protocol

1.4.5.3 Regional and local level

General administrative levels as far as they exist on the regional and local level should be eliminated. Every Business Unit will decide about its own regional and local organisational needs (regional and local offices) and manage them directly.

1.4.6 Management relationships within ADDY

It is recommended to create a selling/buying relationship between the Business Units. One of the main selling/buying relationships will be the one between the Freight and Passenger Business Units on one hand, and the Infrastructure Business Unit and Rolling Stock Units on the other. The former will be responsible for a well functioning railway network, setting up train paths and selling them to the operating units, who will pay user fees on a ton-km and on a train-km basis. The Rolling Stock will carry out major maintenance of the rolling stock to the Freight and Passenger businesses.

1.4.7 Restructuring task force

The task of changing the organisation structure to the proposed new structure is a very significant one. The change must be carefully planned and will require the full commitment of the Director General and the other members of the Executive Board.

We are proposing the establishment of a Re-Structuring Task Force under the direction of the Director General, with responsibility for planning and co-ordinating the implementation of the new organisation structure. Each member of the Board will establish for his Business or Services Unit a Project Implementation team which will carry out the changes required, under the overall direction of the Re-Structuring Task Force.

We anticipate that the proposed changes can be fully implemented within three years, although transition solutions might be necessary in some cases.

The members of the Re-Structuring Task Force should include representatives of each Business and Services Unit, assisted by an expert consultant facilitator respectively.

Tacis

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The objectives of the Re-Structuring Task Force would be to:

- develop a master plan for all the activities that must take place over the entire re-organisation implementation period
- issue guidelines to the Project Implementation Teams in each Business and Services Unit
- co-ordinate and approve the plans of the Units' Implementation teams
- monitor and report to the Executive Board on progress. Amend plans as necessary
- assist the Unit teams in resolving difficulties that may arise, and in taking corrective measures to maintain the momentum of change

The Project Implementation Teams should contain representatives from the main functional areas in the Unit. The Unit Director may chair the Team or delegate the chairmanship to a competent senior manager. In any case the Project Implementation Team will be responsible to the Unit Director, subject to the co-ordination of its work by the Re-Structuring Task Force.

The objectives of the Teams will be to:

- develop detailed implementation plans for their individual Units
- ensure that the individual Unit plans are in harmony with the overall re-organisation plan and with each other
- submit plans for approval to the Re-Structuring Task Force and report on progress

We recommend that external support is provided to the railway to enable the restructuring process to take place. This assistance should be provided in the near future to start implementation and maintain the impetus.

The relationships between the Re-Structuring Task force and Unit Teams are shown in the annexes.

1.4.8 Tendering procedures

Azerbaijan Railways should rapidly introduce tendering procedures in the field of procurement of products and services. Competition between providers within Azerbaijan and/or foreign providers should be used to a maximum advantage of ADDY with the aim of reducing costs.

1.4.9 Outsourcing

ADDY's Board should be given the task to permanently take into consideration the possibility of purchasing services from third parties instead of producing them within ADDY. There should be no ideology playing any role in this respect, only thorough calculations undertaken case by case will show the financial advantages or not of outsourcing.

1.5 Legal framework of Azerbaijan Railways

Examination of the legal framework and status of the Railway, its respective powers, obligations and responsibilities and its relationships Government Ministries and Agencies, including price control and anti-monopoly authorities was carried out by the legal expert, and is included in a separate accompanying report.

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1.6 Regulator

Reference has been made in the text to the position of a Regulator. This person would have the responsibility of determining the level of Public Service Obligation in the light of monopoly operation of the railways.

This person would have also an obligation to ensure that the railway did not abuse their monopoly position. This position will decrease as competition is increased.

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ANNEXES

ORG CHARTTS 1 RAIL ORG 2 CORP SERVICES 3 FREIGHT 4 PASSENGER 5 INFRASTRUCTURE 6 MAIN OF WAY 6 ROLLING STOCK 7 ANCILLARY BUS 8 IMPLEMENTATION UNITS

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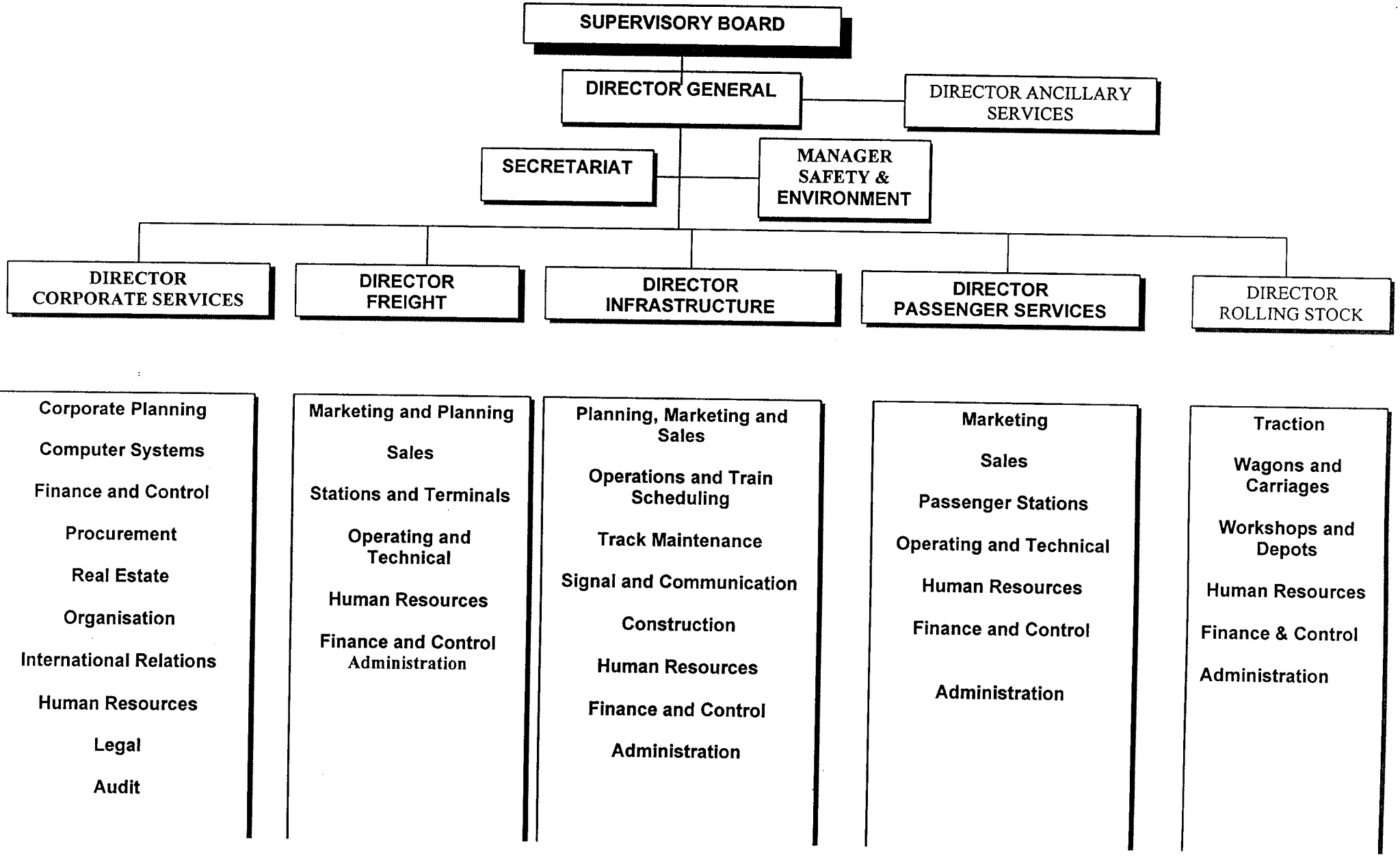
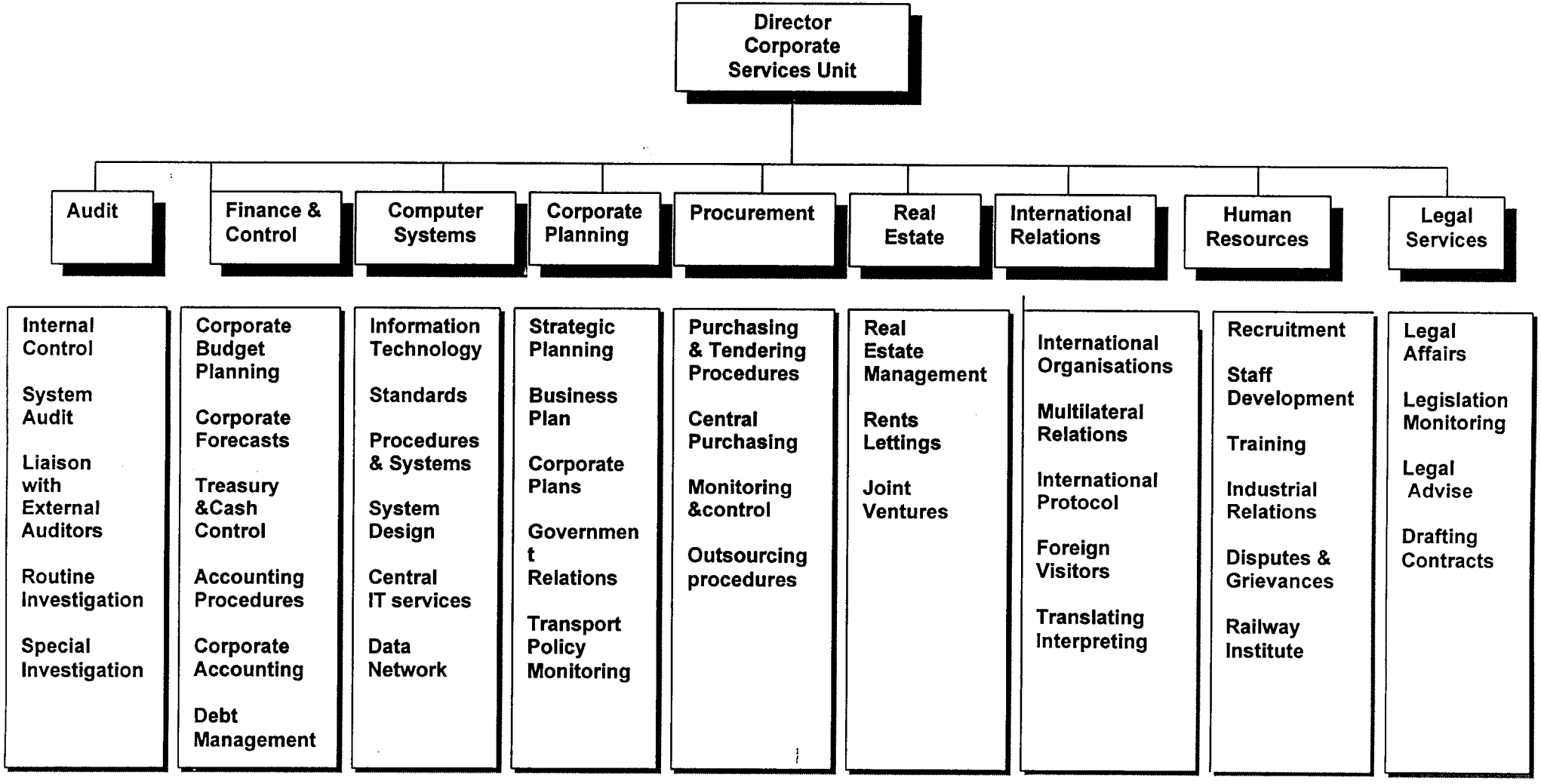
AZERBAIJAN RAILWAYS ORGANISATION CHART

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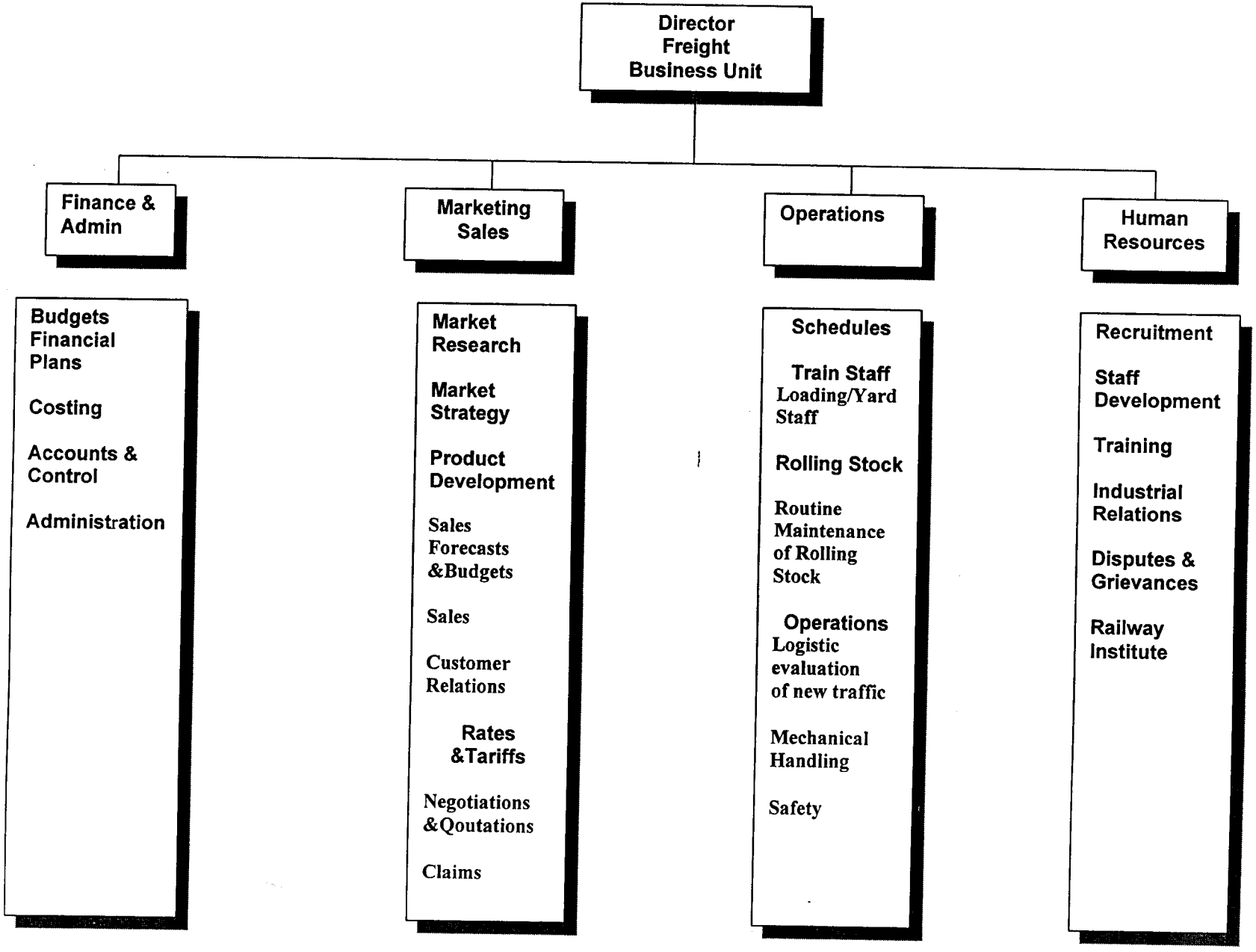
Finance & Control
Computer Systems
Corporate Planning
Procurement
Real Estate
International Relations
Human Resources
Legal Services
Internal Control
System Audit
Liaison with External Auditors
Routine Investigation
Special Investigation
Corporate Budget Planning
Corporate Forecasts
Treasury &Cash Control
Accounting Procedures
Corporate Accounting
Debt Management
Information Technology
Standards
Procedures & Systems
System Design
Central IT services
Data Network
Strategic Planning
Business Plan
Corporate Plans
Government Relations
Transport Policy Monitoring
Purchasing & Tendering Procedures
Central Purchasing
Monitoring &control
Outsourcing procedures
Real Estate Management
Rents Lettings
Joint Ventures
International Organisations
Multilateral Relations
International Protocol
Foreign Visitors
Translating Interpreting
Recruitment
Staff Development
Training
Industrial Relations
Disputes & Grievances
Railway Institute
Legal Affairs
Legislation Monitoring
Legal Advise
Drafting Contracts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Operations
Human
Resources
Budgets
Financial
Plans
Costing
Accounts &
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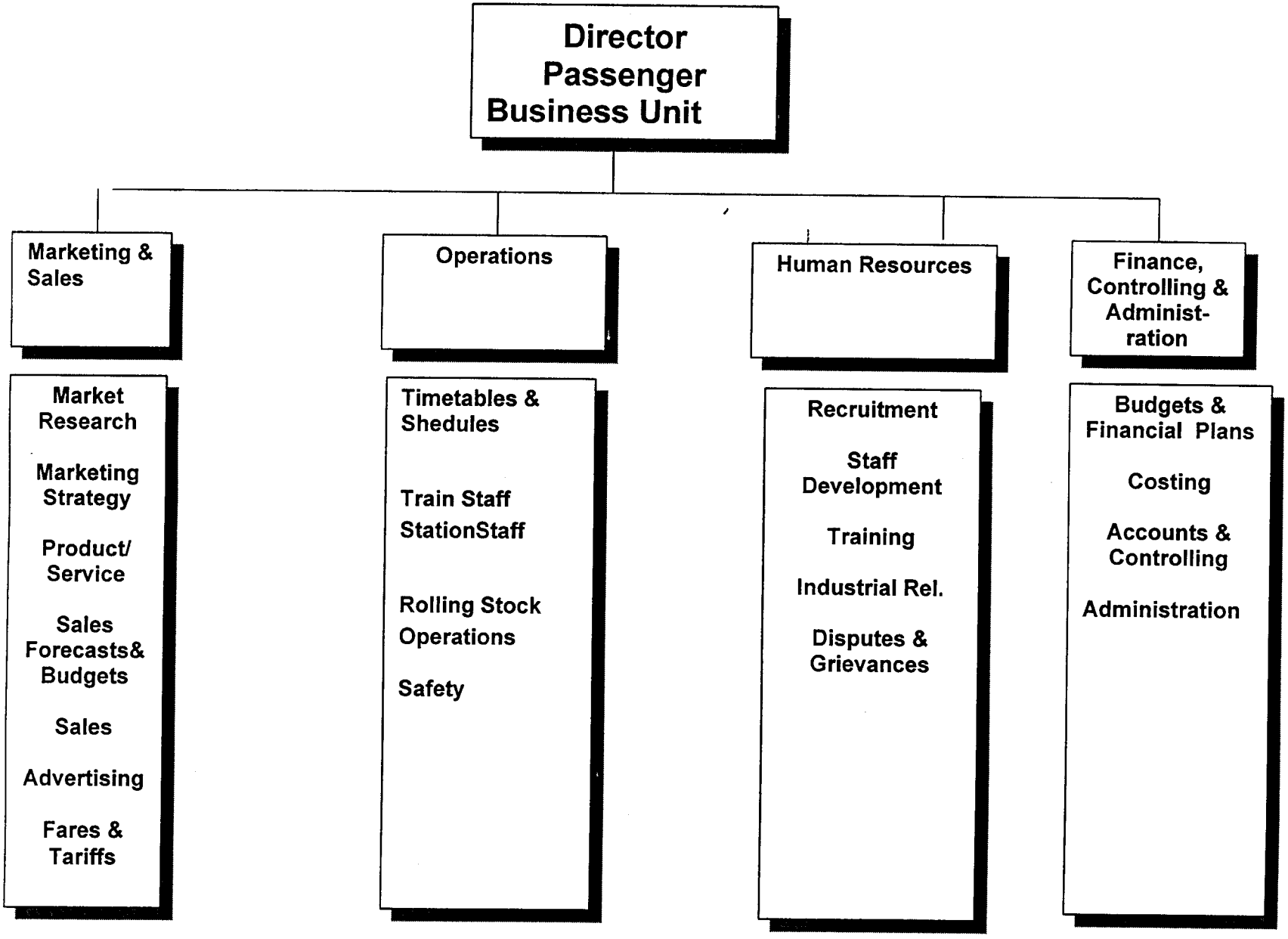
Market
Research
Market
Strategy
Product
Development
Sales
Forecasts
&Budgets
Sales
Customer
Relations
Rates
&Tariffs
Negotiations
&Qoutations
Claims
Schedules
Train Staff
Loading/Yard
Staff
Rolling Stock
Routine
Maintenance
of Rolling
Stock
Operations
Logistic
evaluation
of new traffic
Mechanical
Handling
Safety
Recruitment
Staff
Development
Training
Industrial
Relations
Disputes &
Grievances
Railway
Institute

AZERBAIJAN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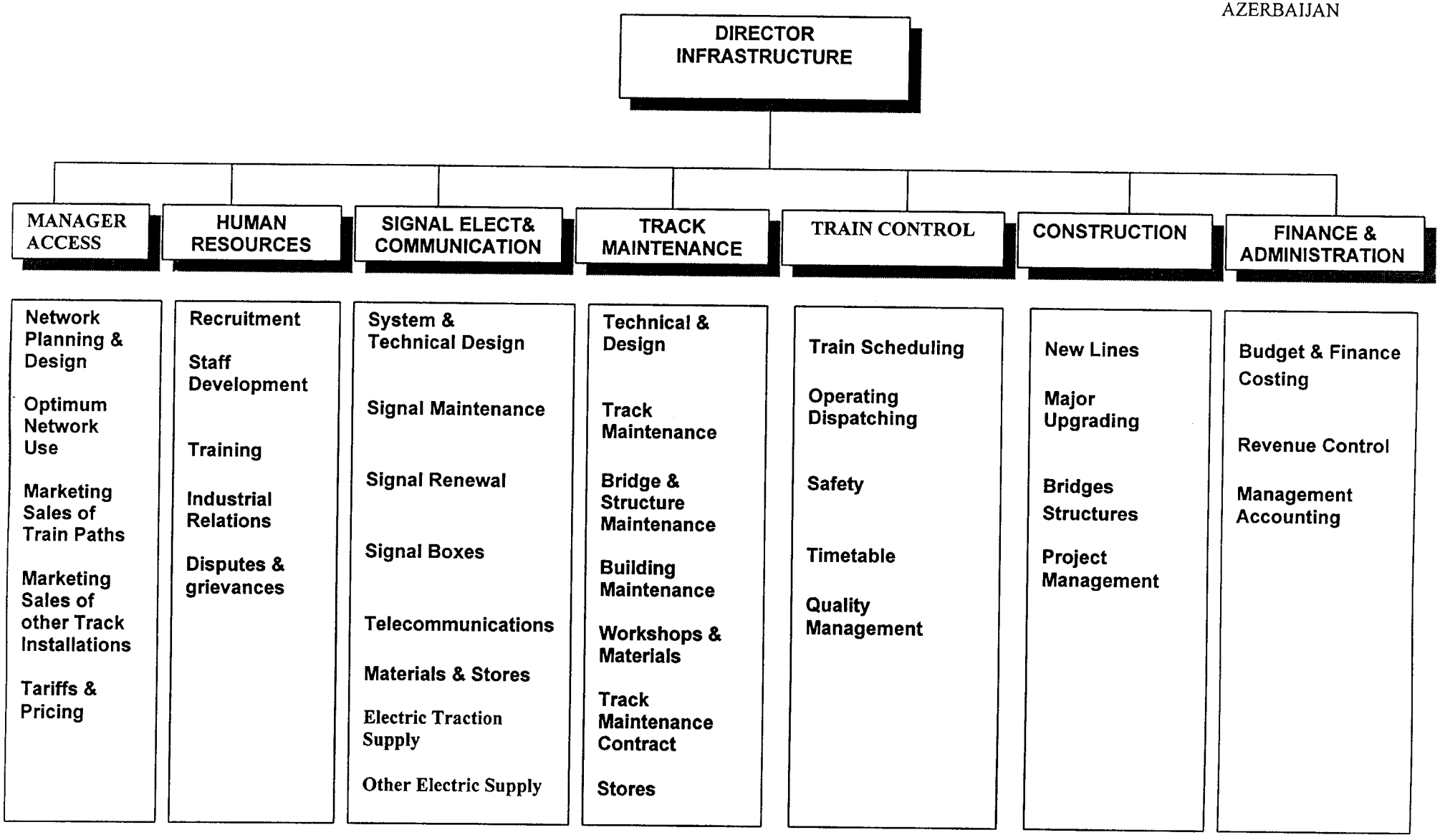
Operations
Human Resources
Finance, Controlling & Administ-ration
Market Research
Marketing Strategy
Product/ Service
Sales Forecasts& Budgets
Sales
Advertising
Fares & Tariffs
Timetables & Shedules
Train Staff
StationStaff
Rolling Stock Operations
Safety
Recruitment
Staff Development
Training
Industrial Rel.
Disputes & Grievances
Budgets & Financial Plans
Costing
Accounts & Controlling
Administration

AZERBAIJAN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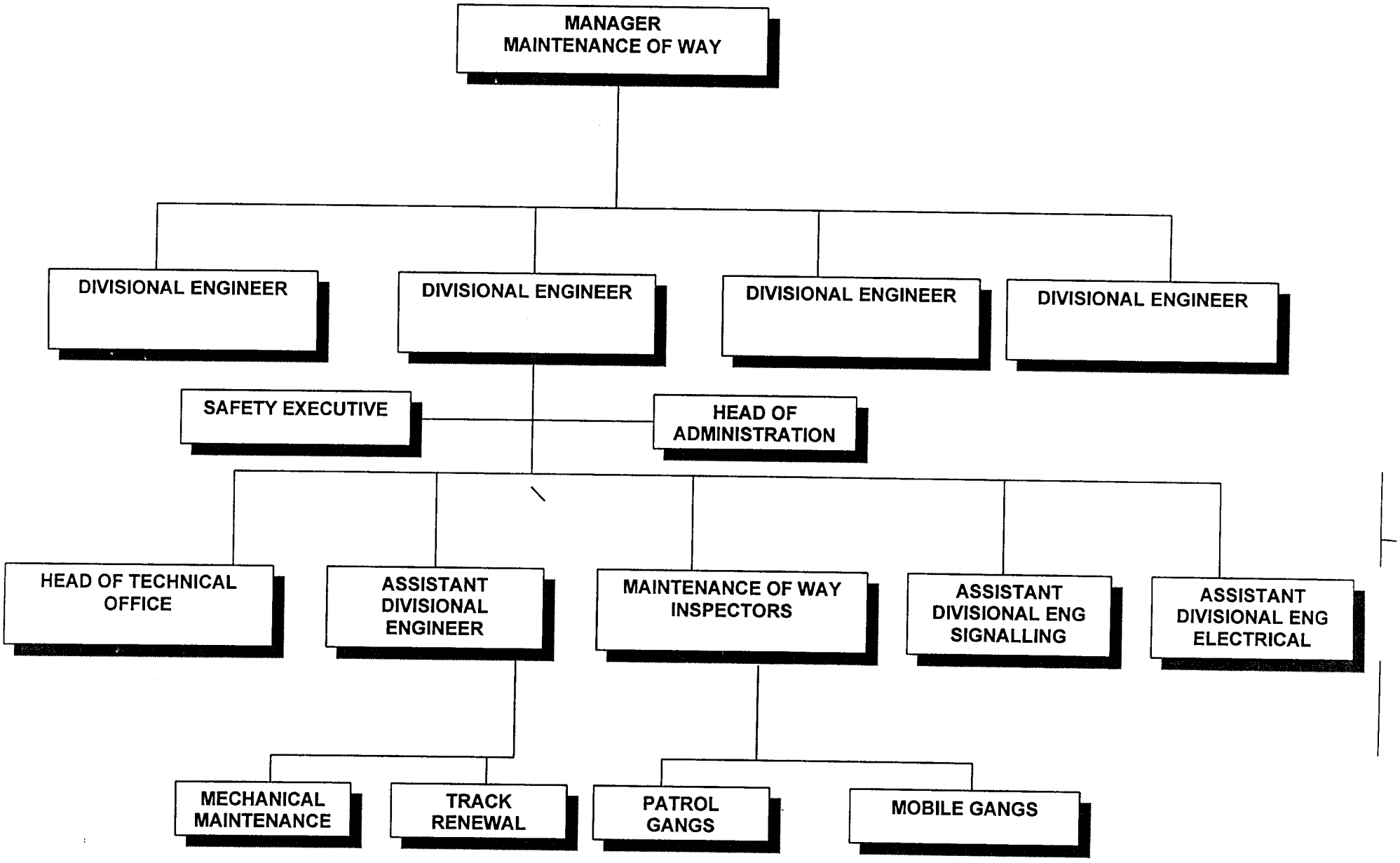
MANAGER ACCESS
HUMAN RESOURCES
SIGNAL ELECT& COMMUNICATION
TRACK MAINTENANCE
TRAIN CONTROL
CONSTRUCTION
FINANCE & ADMINISTRATION
Network Planning & Design
Optimum Network Use
Marketing Sales of Train Paths
Marketing Sales of other Track Installations
Tariffs & Pricing
Recruitment
Staff Development
Training
Industrial Relations
Disputes & grievances
System & Technical Design
Signal Maintenance
Signal Renewal
Signal Boxes
Telecommunications
Materials & Stores
Electric Traction Supply
Other Electric Supply
Technical & Design
Track Maintenance
Bridge & Structure Maintenance
Building Maintenance
Workshops & Materials
Track Maintenance Contract
Stores
Train Scheduling
Operating Dispatching
Safety
Timetable
Quality Management
New Lines
Major Upgrading
Bridges Structures
Project Management
Budget & Finance Costing
Revenue Control
Management Accounting

AZERBAIJAN


MANAGER
MAINTENANCE OF WAY
DIVISIONAL ENGINEER
DIVISIONAL ENGINEER
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DIVISIONAL ENGINEER
SAFETY EXECUTIVE
HEAD OF
ADMINISTRATION
HEAD OF TECHNICAL
OFFICE
ASSISTANT
DIVISIONAL
ENGINEER
MAINTENANCE OF WAY
INSPECTORS
ASSISTANT
DIVISIONAL ENG
SIGNALLING
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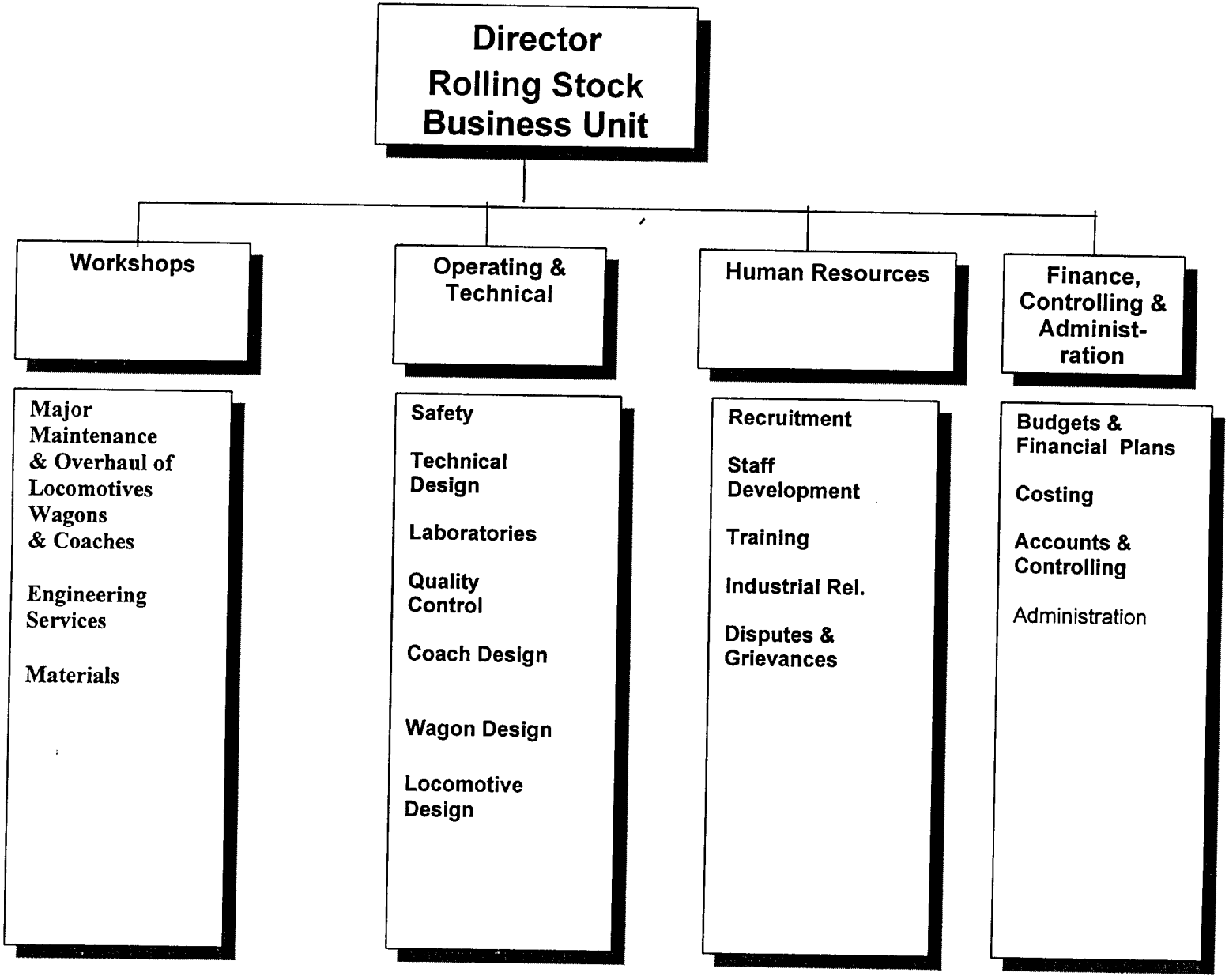
PATROL
GANGS
MOBILE GANGS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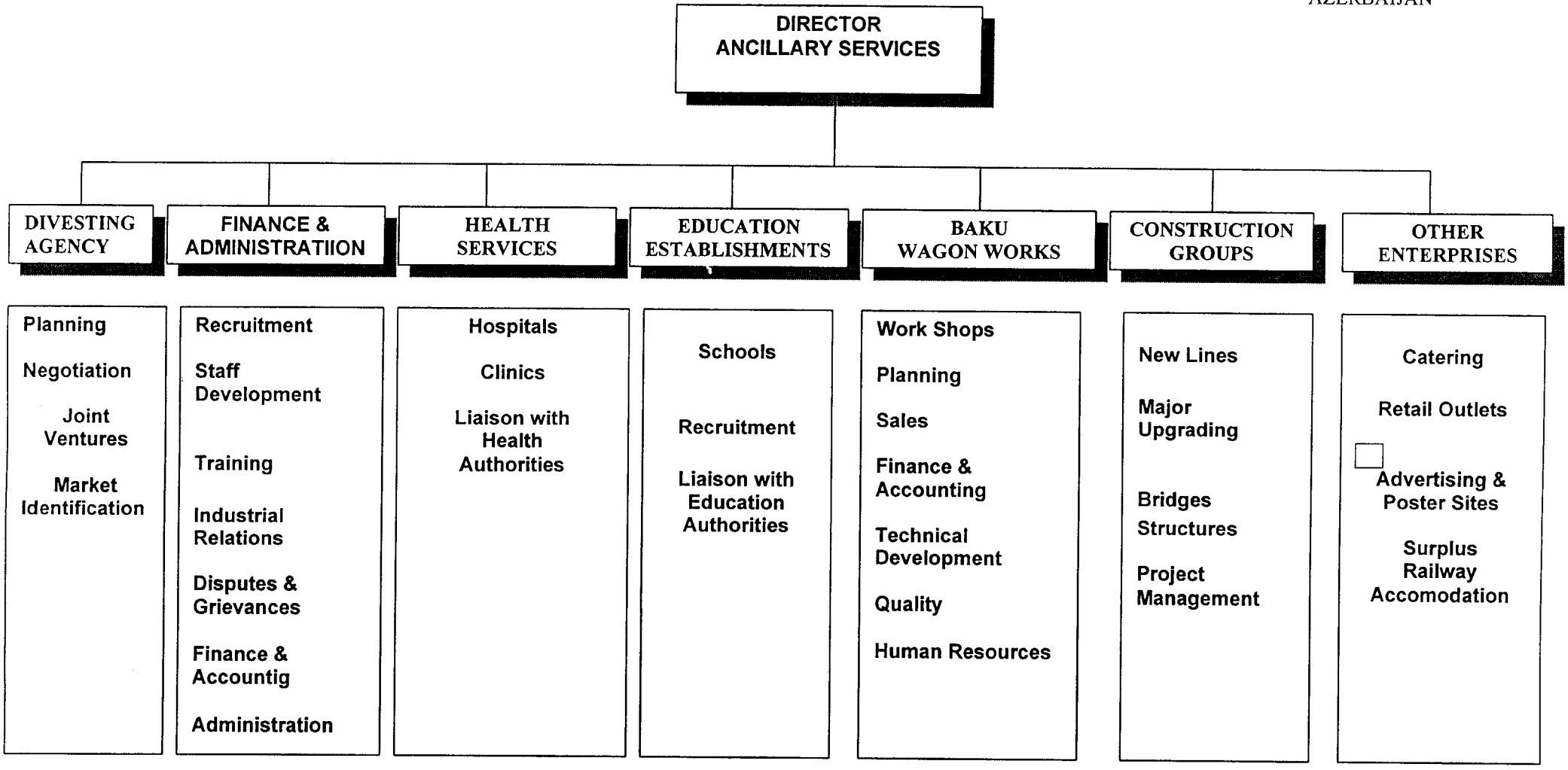
Rolling Stock
Business Unit
Workshops
Operating & Technical
Human Resources
Finance, Controlling & Administ-ration
Major Maintenance & Overhaul of Locomotives Wagons & Coaches
Engineering Services
Materials
Safety
Technical Design
Laboratories
Quality Control
Coach Design
Wagon Design
Locomotive Design
Recruitment
Staff Development
Training
Industrial Rel.
Disputes & Grievances
Budgets & Financial Plans
Costing
Accounts & Controlling
Administration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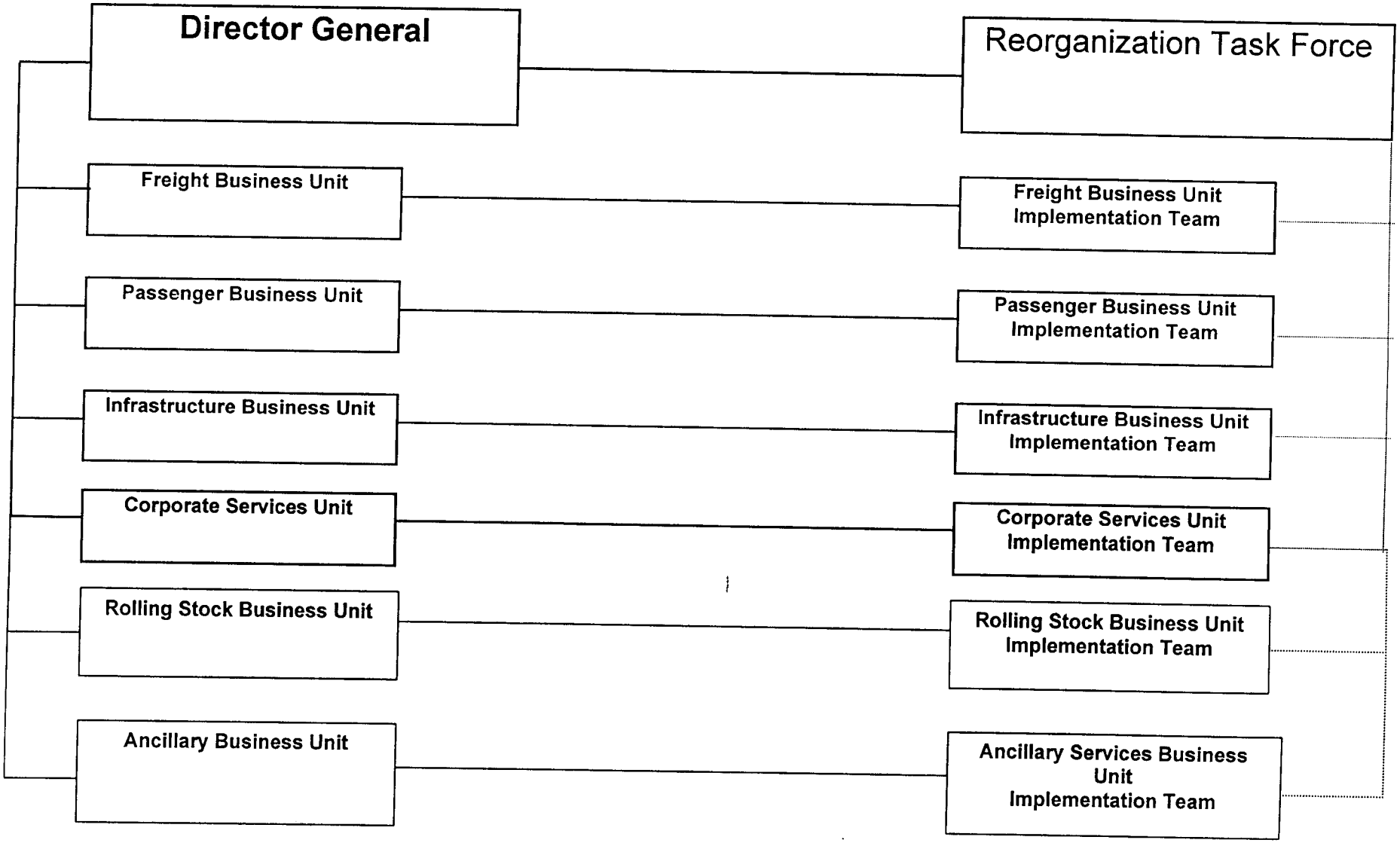
ANCILLARY SERVICES
DIVESTING AGENCY
FINANCE & ADMINISTRATIION
HEALTH SERVICES
EDUCATION ESTABLISHMENTS
BAKU WAGON WORKS
CONSTRUCTION GROUPS
OTHER ENTERPRISES
Planning
Negotiation
Joint Ventures
Market Identification
Recruitment
Staff Development
Training
Industrial Relations
Disputes & Grievances
Finance & Accountig
Administration
Hospitals
Clinics
Liaison with Health Authorities
Schools
Recruitment
Liaison with Education Authorities
Work Shops
Planning
Sales
Finance & Accounting
Technical Development
Quality
Human Resources
New Lines
Major Upgrading
Bridges
Structures
Project Management
Catering
Retail Outlets
Advertising & Poster Sites
Surplus Railway Accomodation

Re-Structuring Implementation Organisation



RESTRUCTURING OF AZERBAIJAN RAILWAYS

- LEGAL CONSIDERATIONS

RESTRUCTURING OF AZERBAIJAN RAILWAYS - LEGAL CONSIDERATIONS

1. *Introduction*

The task of the legal expert requires an assessment of the legislative environment and the provision of guidance on the drafting of a new railway law. The existing legal framework in Azerbaijan has been studied and guidance notes on a suggested draft law has been prepared; the latter have to do with essential components of a new railway law, and the draft prepared for Georgia is exhibited for illustration purposes.

2. *Legal framework - summary*

2.1 Railways in Azerbaijan are part of the network developed by the former Soviet Union and were regulated accordingly. With independence an entirely new situation arises; based upon an examination of the legal instruments referred to below and interviews with personnel in the legal department of the railways administration including the head of the legal department the development since independence are described in outline in this report.

2.2 In the former USSR railways were divided into 27 separate administrations, which reported to the USSR Ministry of Railways in Moscow and were, in effect, sub-divisions of that Ministry. One of these railways administrations now constitutes Azerbaijan railways.

2.3 Following independence, Law No. 359 "On temporary validity of the juridical power of the laws of the former USSR on the territory of the Azerbaijan Republic" was enacted on the 28th October 1992. This continued on an interim basis a number of laws including the law "On railway transport" of the USSR of 1991. This continues to be the basic law concerning railways, to the extent that it does not conflict with the constitution of Azerbaijan or other laws. For example, Article 12 dealing with labour issues no longer applies.

2.4 It is understood that a railway law has been drafted some years ago but this draft has not been acted upon. The TRACECA model draft has also been furnished to the government.

2.5 A Ministry of Transport does not presently exist. By decree of the President dated 5th August 1998 a Ministry of Transport is required to be established and given, inter alia, responsibility for railway transport. It is anticipated that the Ministry will be established following the October Presidential election. It would normally be expected that this Ministry will take some time to determine its structure and functions.

The decree was made by the President pursuant to his powers under Article 109.7 of the constitution of Azerbaijan.

2.6. To date the railway administration has come within the functions of the Cabinet of Ministers. By decree of the Cabinet of Ministers No. 171 dated the 8th August 1995 the charter/regulations of the Azerbaijan state railways was established. The main provisions are -

- Azerbaijan state railway is a state owned enterprise under the Cabinet of Ministers.

- Azerbaijan state railway operates having regard to the law "On enterprises", is a legal entity, may conclude contracts and exercise property and non property rights and duties, sue and be sued.

- It has a separate balance sheet and operates on a self supporting and self financing basis.

- It represents railway interests nationally and internationally and may enter into joint ventures.

- It has its own legal personality.

- Its objectives are essentially railway orientated but also include social matters for the benefit of employees.

- Its property belongs to the state; Azerbaijan state railways exercises the property rights.

- Azerbaijan state railways is not responsible for government obligations and *vice versa.*

- The budget of the railways is independent of the state; profits remain at the disposal of the railway.

- The head of the railways is appointed by the Cabinet of Ministers with the agreement of the President. The Deputies are similarly appointed but are subordinated to the head of the railways. The departmental heads are appointed by the head of railways.

- The head of railways with the deputy heads and other senior staff, workers and other employees form the Board of Azerbaijan state railways; the number and membership is subject to the approval of the Cabinet of Ministers.

- The head of railways, in case of disagreement, implements his own decisions and must report the disagreement to the Cabinet

of Ministers. The members of the Board may separately express their opinion to the Cabinet of Ministers.

- Executive authority resides with the head of railways.

2.7 The existing railways administration is capable of functioning with a high degree of autonomy; nevertheless in order to operate commercially certain changes are indicated, which are dealt with in the recommendations below.

2.8 The law "On enterprises" (at Article 1) provides that an enterprise is ".....an independent economic unit ..... producing and selling products, carrying out works and rendering services to satisfy public needs and to gain profit". The reference to this law in the charter of Azerbaijan state railways is indicative of an intention on the part of the Cabinet of Ministers that the railways shall be allowed commercial freedom.

International traffic is dealt with on the basis of international agreements dating from 1951 and updated in January 1998. Within the countries the USSR regulations still operate.

3. ***Monopoly and Price Control Issues.***

3.1 Article 34 of the law "On enterprises" allows for free prices and tariffs, for prices and tariffs to be fixed by agreement, and in the cases envisaged by legislation - for the State to fix prices and tariffs.

3.2 Article 7 of the 1991 law on railways provides that tariffs in respect of passengers and freight are determined by the government having regard to economic considerations. Additional works and services requested by freight customers are based on agreement between the parties.

3.3 The 1991 law at Article 1 recognises railways as a centralised monopoly.

4. ***Recommendations***

4.1 It is recommended that the charter of Azerbaijan state railways should be changed to accommodate the organisational structure, accounting and reporting procedures contained in the management re-organisation proposals listed in the restructuring study.

4.2 Consideration should be given to the future incorporation of Azerbaijan state railways as a joint stock company, with the railway infrastructure remaining the state property made available to all railway operators including Azerbaijan state railways.

4.3 A railway law should be enacted to replace the 1991 law, and should address the following issues.

4.3.1 The code should legislate for railway transport as a system of transport rather than as a state monopoly.

4.3.2 In the case of Azerbaijan state railways it should provide that management, within the context of a performance agreement, shall be independent in the direction, management and administration of its enterprise and from the administrative and economic control and internal accounting of the state, and managed according to the principles which apply to commercial companies.

4.3.3 It should provide for a definition of what constitutes "railway infrastructure"; railway infrastructure should be owned by the State; management of the infrastructure should in future be undertaken on behalf of the State by Azerbaijan state railways on the basis of a commercially orientated contract, to be interlinked with the performance agreement referred to below.

In this way the State will be fully informed of where the money is being spent and on the physical state of the infrastructure and participate in the planning process in accordance with the objectives for railway transport.

4.3.4 It should require that the accounting system of Azerbaijan state railways and any other railway enterprise clearly separates infrastructure matters from other activity, that separate accounts are maintained in respect of freight transport and passenger transport and in respect of public service obligations, thus ensuring transparency in financial matters.

4.3.5 It should require a formal business planning process on a "rolling" 5 year basis.

4.3.6 It should guarantee freedom of tariff setting in freight transport except to the extent that monopoly situations need to be addressed.

4.3.7 It should recognise that where the government imposes any non commercial obligations to operate loss making services or to offer uneconomic discounted tariffs to particular groups of customers then the government should observe the principle that financial compensation ought to be paid in respect of such services.

4.3.8 The stripping out of social services from the railways should be facilitated.

4.3.9 Private sector participation and investment should be encouraged.

4.3.10 Environmental protection laws should be applied to the railway.

4.3.11 A system of licensing of the competence of railway operators and their rolling stock should be provided, to apply to national as well as to international operators. All licensed operators should be eventually entitled as of right to access to the railway infrastructure on non discriminatory terms.

4.3.12 It should provide for State supervision of railway safety through the appointment of inspectors and the making of regulations. This function should be a Ministry function rather than a function of Azerbaijan state railways.

5. ***Draft Railway Law***

5.1 The draft prepared in Azerbaijan some years ago has not been made available to the consultant; it would appear that it has been overtaken by developments since it was first prepared.

5.2 The TRACECA model railway code drafted by Scott Wilson Kirkpatrick ("SWK") has been made available to the government for consideration. This has a number of short comings:

The Scott Wilson Kirkpatrick ("SWK") model Rail Transport Code is one of a series of model laws developed for use in the TRACECA countries. As SWK acknowledges, the models do not have to be slavishly followed and will require adaptation in order to suit national policy. The draft now under consideration for enactment in Georgia is an adaptation of the model.

The model developed by SWK is loosely based on that for French railways (SNCF) with the addition of much of the COTIF/CIM provisions coupled with substantial elements from the previous Georgian Railways statutes.

By way of preliminary comments:

- a model based on that for French railways SNCF is unlikely to sit easily with what is needed in the TRACECA countries. SNCF is probably the most technically advanced railway in the world, it consumes a vast quantity of investment funds and enjoys the support of the population as representing the excellence of French scientific and technical development. This, rather than any particular attractive quality of French Railway Law, is the reason for its success. In the case of the TRACECA countries, a model based on the legislation enacted in Germany after unification to deal with the railways of the former East German state might be more appropriate;

- international conventions such as COTIF consist of a set of rules subscribed to and supported in national legislation by the authorities of the countries concerned, following development by representatives of railway transport in those countries, often at the prompting of international agencies. The need for legislation arises because without legislation, the railway enterprises of a small number or even one of the countries might disregard the terms. Legislation is therefore needed to promote confidence in the convention. Where national rather than international considerations apply, this is not necessary, or even desirable, since it leads to rigidity and inflexibility, and can result in a conflict of laws within the national jurisdiction. It is better by far for the Civil Law to apply in contractual matters, with the railway enterprises also free to develop suitable contractual regimes with customers, subject to control by the State, where necessary, to curb abuse of monopoly or dominant positions;

- while overnight change from the practices of the former Soviet Union is not possible, only to the extent that a country sees it to be necessary is it advisable to continue with elements of Georgian Railways statutes.

- as a general principle, laws should not be any longer than necessary;

- in a developing situation, it is a better approach to provide a framework permitting transition and development at a pace which is sustainable. If the law is too elaborate, it will not be fully observed, for reasons of practicality, and this will tend to undermine the law as a whole.

5.3 Amendment of the model code, if it is to be used, is therefore indicated. As an alternative, regard might be had to the draft law prepared for Georgia, which is annexed to this report. This draft consists of amending the existing law, and follows the principle currently being applied or proposed within the countries of the European Union, and allows for the implementation of the recommendation in this report. Amendment to allow for the local differences could be undertaken by the Ministry of Transport as one of its initial projects following its establishment. It is strongly recommended that a framework approach should be adopted allowing flexibility that will enable the development without legal impediment of a successful railway transport system.

ANNEX 1

What follows is a draft law and commentary prepared for Georgia; it is included for illustrative purposes only - the principles identified in the commentary are recommended for incorporation in a new railway law for Azerbaijan. This should be done as a matter of priority when the Ministry of Transport is established.

DRAFT

LAW OF GEORGIA "ON RAILWAY TRANSPORT"

The Law "On Railway Transport" determines the economical, legal and organisational basis of railway transport activity, its place and role in the national economy and regulates its relations with passengers, consignees and consignors.

Chapter I

Scope and Definitions

Article 1. Railway Transport in the National Economy

Railway transport is part of a single transport system, that satisfies the needs of the population, enterprises and organisations of the governmental and non-governmental sectors concerning transportation and transit and other services in national and international conveyance, and also carries out military transit based on the charter on railway transport military transit which is confirmed by the President of Georgia.

Private legal persons may implement passengers, consignees and consignors services under rules regulated by legislation.

Article 2. Definitions and Interpretation

In this law:

a) "Railway enterprises" are enterprises which provide railway transport services and/or manage a railway infrastructure.

b) "Transport services" comprise the carriage of passengers or goods on a railway infrastructure.

c) Managing a railway infrastructure includes the building, operation and maintenance of railway track and infrastructure and signalling as well as the management of traffic and security systems.

d) "Railway infrastructure" is the territory of railway transport and includes all routes, rails, signalling, telecommunication and fixed installations necessary for the circulation and safety of traffic and includes also buildings which serve the administration of the railway infrastructure, passenger and goods platforms and buildings in which are found sales and dispatch facilities for the transport of goods and passengers as well as movable and non-movable sales, dispatch and loading facilities provided that they are available to every railway enterprise. Railway infrastructure does not include private sidings.

e) "Private sidings" means railway tracks and associated equipment and buildings used for loading and unloading of freight which belong to the managers of the sidings.

f) "Public service obligations" means obligations which the railway enterprise, if considering its own commercial interests, would not assume or would not assume to the same extent or under the same conditions and consist of the obligation to operate, the obligation to carry and tariff or fare obligations.

g) "Railway joint stock company" means the joint stock company required to be established by Article 3 of this Law.

Chapter II

Reorganisation of the present railway administration.

Article 3. Transitional provisions.

3.1 The present railway administration, immediately upon the enactment of this law, shall become a structural unit within the Ministry of Transport under the competence of the Minister for Transport, and shall then be established as a joint stock company ("the railway joint stock company").

3.2 Until the railway joint stock company is established, the provisions of the Law of Georgia "On the Structure and Activities of State Power shall apply; the railway enterprise shall also be managed in accordance with the principles of Article 8.1 of this Law.

3.3 The railway joint stock company shall be established by the Minister for Transport under the Law of Georgia "On Entrepreneurs" at the earliest moment and in any event not later than six months after this Law comes into force.

3.4 The balance sheet of the railway joint stock company shall not include the railway infrastructure, which shall belong to the State in perpetuity.

3.5 The functions described in this law as functions of the Ministry shall not be functions of the railway joint stock company. The Ministry may retain in its own employment such staff of the present railway administration as it needs for the purpose of discharging any of its railway functions.

3.6 The present railway administration under the supervision of the Ministry of Transport shall establish subsidiaries and transfer to these subsidiaries social and non-profit making activities and the staff concerned with these activities.

The balance sheets of these subsidiaries shall include the assets associated with the activities, unless these assets are required for railway operations, in which case monetary compensation representing the value taken by the railway enterprise shall be included in these assets.

These subsidiaries shall then cease to be the responsibility of the railway enterprise, they shall be the responsibility of and belong to the appropriate Ministries, and in the case of doubt as to the Ministry responsible, shall be the responsibility of and belong to the Ministry of Transport until this issue is resolved.

Article 4. Organisation of the railway joint stock company.

4.1 The railway joint stock company shall be formed and shall be regulated under the provisions of the Law "On Entrepreneurs" and shall also observe the requirements of this Law. The charter and regulations of the railway joint stock company shall be determined by the Ministry of Transport and approved in accordance with the relevant procedures.

4.2 The Ministry of Transport shall have the power of management over all of the State owned shares in the railway joint stock company.

4.3 The directors of the railway joint stock company who are concerned with the technical operation of railway transport services or the technical maintenance of railway infrastructure shall possess the relevant qualifications and competence for their areas of activity.

4.4 Activities of the railway joint stock company not concerned with providing railway transport services or managing railway infrastructure shall be re-organised. Separate subsidiary entities, which may be joint stock companies owned by the railway joint stock company, but which must have their own separate balance sheet and accounting, shall be established for these activities by the railway joint stock company. This process must be completed within twelve months from the date of the establishment of the railway joint stock company. These subsidiaries may be privatised.

4.5 The railway joint stock company may also establish subsidiary joint stock companies for specific transport services or for managing railway infrastructure; it may do so either on its own account or in joint venture with private investors. These subsidiaries may be privatised, subject to the approval of the Government of Georgia.

4.6 The railway joint stock company including its subsidiaries shall be managed and shall conduct its business planning in accordance with the principles set out in Article 8 of this Law.

Chapter III

Management of Railways

Article 5. Legislation in the sphere of railway transport.

The legislation in the sphere of railway transport consists of the Constitution of Georgia, contracts and agreements of Georgia in the international sphere, provisions of the Ministry of Transport of Georgia and other normative acts.

Article 6. Property of railway transport.

The railway infrastructure shall always be the property of the State, and shall be managed in accordance with contracts entered into between the Ministry of Transport and railway enterprises.

The equipment associated with the railway infrastructure may not be transferred to other organisations without the consent of the Ministry of Transport.

Where required by the national interest, the Ministry of Transport may make regulations restricting the disposal by State owned railway enterprises of locomotives, rolling stock, equipment for loading and unloading and other essential equipment.

Article 7. Territory of the railway infrastructure, zones for protection and protection of the environment.

In accordance with the legislation of Georgia, the territory of railway infrastructure is the territory in its usage.

The territory of the railway infrastructure is allotted for the rails and stations (including the right of way) as well as for constructions, buildings and other objects which are necessary for the development and exploitation of the railway infrastructure. "Right of way" is territory adjoining the railway, the sizes of which are

determined by confirming norms and documentation, but no more than 20 metres on each side of the outlying rail is allowed.

For the provision of normal exploitation of rails, equipment and other objects of the railway infrastructure, located in places of natural calamity, protective zones are regulated.

The rule on the determination of protective zones, their sizes and the regime of using the territory which is allotted for this purpose is determined by the legislation of Georgia.

Railway enterprises are obliged to make provision for the effective use of natural resources and to safeguard the environment from contamination. Railway enterprises are obliged to make reconstructions and make compensation for damage of an ecological character in order to eliminate the results of accidents, collisions and other cases, caused by them. The legislation of Georgia concerning the protection of the environment shall apply to all railway enterprises.

Article 8. Railway Management.

8.1 Railway enterprises must be independent in direction, management and administration as well as from the administrative and economic control and internal accounting of the State. Their assets, budget and accounting shall be separated from those of the State.

They shall be managed according to the principles which apply to commercial companies; this shall also apply to their public service obligations and to contracts concluded in respect of these obligations.

Railway enterprises which provide railway transport services as well as managing a railway infrastructure must separate these areas in their management and accounting procedures.

Separate cost and revenue accounts must be kept for freight, passenger and infrastructure activities. Where public service obligations are undertaken, the operating accounts shall be separate. The transfer of subventions from one area to another is not permitted.

The compliance with these legal requirements must be shown in the accounting of these areas. This obligation shall apply to all State owned railway enterprises as well as to privately owned railway enterprises.

8.2 The Ministry of Transport acting on behalf of the State shall enter into a contract for a period of five years with the railway joint stock company.

The contract shall specify the activities (including the investment and financing program) to be undertaken by the railway joint stock company and

the funds to be provided by the State as subvention, as payment in respect of public service obligations and as investment.

The railway joint stock company shall be required under the contract to produce to the Ministry for Transport a five year business plan setting out its strategy and development programme and corresponding operational and financial targets, projected over a five year period, and encompassing the infrastructure management, freight business, passenger business, the financial payments sought from the Government budget for public service obligations, corporate functions and ancillary activities and business plans.

At the end of the first year, the railway joint stock company shall be required to report on the details of the extent of achievement measured against these targets. The contract shall then be revised having regard to this, and extended for a further year, with the requirement that the business plan also be extended for a further year.

This process shall be repeated on an annual basis, with the intention also that the business plan shall always be projected five years forward and shall continue without limitation for so long as the railway joint stock company remains in the majority ownership of the State.

The terms of the contract shall at all times follow good commercial practice.

Article 9. Public Service Obligations and non-commercial services

9.1 The Ministry of Transport may require railway enterprises to undertake public service obligations.

9.2 Such public service obligations may be included in contracts entered into between the Ministry of Transport and railway enterprises or may be specified by order. Orders or contracts shall specify the level of services which are to be operated, the level of passenger fares and the extent of concessionary fares given to particular passenger classes.

9.3 Compensation for public service obligations, social, military transit and any other non-commercial services required by the Government shall be paid to railway enterprises out of the annual State budget.

9.4 The amount of the compensation shall be not less than the cost saving which would be possible if the non-commercial services were terminated, taking into account all relevant matters.

9.5 Under no circumstances shall cross-subsidisation of loss-making passenger services from freight services be permitted.

9.6 Where there is doubt as to which Ministry or Government agency is liable to pay compensation under this Article, it shall be paid to the railway enterprise by the Ministry of Transport, which shall in turn be entitled to be re-imbursed by the party that is liable.

Article 10. Tariffs

10.1 Tariffs for international transit including the countries of the former Soviet Union are determined on the basis of international contracts and agreements.

10.2 All railway enterprises, both privately and State owned (including the present railway administration and the railway joint stock company) shall be free to set their own tariffs for freight, which shall be published by these enterprises, except where control is necessary for traffic where railway transport has a natural monopoly.

10.3 Where tariffs are controlled in a monopoly situation, the tariffs are determined by the Ministry of Transport with the agreement of the Ministry of Finance and subject to the approval of Parliament. These tariffs must respect the commercial principles under which railway enterprises operate.

10.4 In all situations, it shall be permissible for the contract with the customer to provide for additional payment for work and services not envisaged in the tariff.

Article 11. Management and operation of the Railway Infrastructure.

11.1 The Ministry for Transport has responsibility for the management and operation of the railway infrastructure. This responsibility shall be discharged on the basis of contracts entered into between the Ministry of Transport and railway enterprises. One or more contracts may be entered into, and they may be with the railway joint stock company and with other railway enterprises.

The contracts shall require that such railway enterprises shall plan operations so as to maximise the amount of traffic which may be carried on the railway infrastructure and in such a way that shall best facilitate the plans and requirements of all railway enterprises intending to use it.

11.2. The Ministry for Transport shall establish a charge for the use of the railway infrastructure to railway enterprises that provide transport services. The charges shall be collected by the railway enterprise managing the railway infrastructure and shall be used to meet the operating costs and investment costs as agreed with the Ministry in the management contract. Any surplus shall be retained in a fund for re-investment in the railway infrastructure. The charges shall be calculated by the railway enterprise managing the infrastructure, with the approval of the Ministry of Transport and Ministry of

Finance and shall be reviewed when circumstances change. The charges shall not discriminate between different railway enterprises and shall also be paid by the railway enterprise managing the railway infrastructure if that railway enterprise also provides transport services.

11.3 No railway enterprise shall be permitted to use the railway infrastructure unless it has been granted a licence for this purpose, except where the provisions of international agreements permit such use.

11.4 Licences to use the railway infrastructure shall be issued in accordance with the law and the Ministry of Transport shall make and publish regulations on standards concerning these licences. In all cases the applicant railway enterprise must be able to meet standards relating to good repute, financial fitness, professional competence and cover for civil liability.

11.5 The Ministry of Transport may, by order, require the railway joint stock company to provide traction to other railway enterprises that intend to use the railway infrastructure, on commercial terms.

11.6 Owners and users of private sidings shall comply with the rules of the railway enterprise managing the railway infrastructure and of the Ministry of Transport concerning the movement of their own rolling stock on the railway infrastructure. They are responsible for the safe movement of the rolling stock on the private sidings, and shall maintain the technical equipment and the rolling stock to the appropriate standard.

Chapter IV

Safety and Security

12. Safety of Railway enterprises and Railway Infrastructure

12.1 The Ministry of Transport shall exercise State control over railway transport. It shall appoint inspectors, who shall be entitled to enter upon the railway infrastructure and upon the property of railway enterprises for the purpose of supervising and checking the same and reporting their findings to the Ministry of Transport.

12.2 Regulations on the technical exploitation of railway infrastructure and railway transport services are the responsibility of the Ministry of Transport

12.3 Railway enterprises managing the railway infrastructure are obliged to make safe provision for the safe movement of trains.

Locomotives, rolling stock, equipment and other technical means must correspond to the rules of railway exploitation, and requirements regulated by security, labour protection, ecological and State standards.

Railway stations and other locations where intensive movement of trains takes place and where shunting movements are carried out are zones of extended danger. Rules concerned with railway working, movements and crossing the rails are prepared by the railway enterprise managing the railway infrastructure and confirmed by the Ministry of Transport.

Placing objects which are radioactive, explosive, poisonous or toxic near buildings or rails of general use is prohibited. Such objects may not be transported to such locations or stored, loaded or unloaded there.

The minimum distance of separation from the rails as well as the points of intersection by pipes, communication and electronic lines is determined by appropriate constructive norms and rules prepared by the railway enterprise managing the railway infrastructure and approved by the Ministry of Transport.

All persons, organisations and enterprises that send and receive explosive, poisonous, radioactive and other kinds of dangerous freight and goods are obliged to make provision for their safe transportation based on the rules approved by the Ministry of Transport.

During the transportation process, protection of dangerous freight and goods is provided by the transport police.

Article 13. Protection of freight and other objects transported by rail.

During transportation, the protection of freight, luggage and mail is provided by the railway enterprise.

The most important objects and special freight transported by railway while in the railway stations and during the transportation are protected by transport police. The list of such objects and freight is confirmed by the Ministry of Transport, after consultation with railway enterprises.

The railway enterprise is materially responsible for its consignees and consignors.

The sale of freight and goods which lacks the appropriate documentation and cases of unprotected transportation are dealt with in the railway enterprises terms of contract.

Safeguard of public order, the struggle against criminality and fire control shall be provided by the transport police and its territorial subdivisions together with the railway enterprises.

Fire prevention prophylactic operations are implemented and fires are extinguished by a special division of the railway enterprise managing the railway infrastructure. In the

case of emergency, this is done with the fire brigades of the Ministry of Internal Affairs.

Article 14 Organisation of Railway Transport operations in cases of emergency.

Railway enterprises shall take measures to eliminate the causes of all kinds of collisions, accidents and events of natural calamity that may be prevented in the future development of railway transport.

The transport police, territorial subdivisions of the police, troops and subdivisions of the Ministry of Defence shall assist in eliminating the results of collisions, accidents and events of natural calamity that pay be hazardous to health, train movements or endanger freight and goods or its storage.

Local authorities shall, during natural calamity, carry out works required by the railway enterprise managing the railway infrastructure.

Chapter V

General

Article 15. Responsibility for damage to railways.

Responsibility of a person for damaging the technical means, prevention and obstruction of railway works is determined by the legislation of Georgia.

Article 16. Terms of employment of staff of railway enterprises.

16.1 The terms of employment of the staff of railway enterprises are regulated by the legislation of Georgia.

16.2 The Ministry of Transport may make regulations specifying categories of employees who are required to undergo specific training. These regulations may require that certificates of competence are required to be held by specific categories of employees, to be issued in accordance with the regulations.

16.3 The Ministry of Transport may make regulations requiring specific categories of Employees to comply with medical standards. The regulations shall specify the required medical standards.

Article 17. Language of Communication in Railway Transport.

All kinds of accounting, balance sheets, commercial, technical documentation, telecommunications, legal and technical information as well as internal staff

communications in railway enterprises and organisations which are connected with train services, passenger transportation and freight and goods transit are implemented in the Georgian language.

Article 18. Railway time.

In the organisations and enterprises of railway transport, and which take part in traffic, the local time of Tbilisi shall be used, in order to provide central control of the traffic.

Article 19. Responsibility of Railway Enterprises.

Liability of railway enterprises for not meeting the freight delivery date as well as late delivery of freight to the destination and late delivery of passengers to appropriate stations is determined by terms of the contract, and the laws of Georgia.

Article 20. Insurance.

For the social maintenance of passengers and the members of their families, State obligatory insurance in respect of injuries to passengers is required for railway enterprises.

Voluntary insurance of freight and luggage is also possible.

COMMENTARY ON THE GEORGIAN DRAFT RAILWAY LAW

Preamble.

The preamble in the existing law has been retained.

Article 1.

The existing Article 1 has been retained.

Article 2.

The new Article setting out definitions has been incorporated. This deals with railway as a system of transport allowing for a multiplicity of railway enterprises. Most importantly, it contains a definition of railway infrastructure - this is based upon the definition contained in EU Council Directive 91/440.

It also incorporates a definition of "public service obligations".

Article 3.

This set out a number of transitional provisions. It envisages the railways being formally constituted as a structural unit within the Ministry of Transport for a transitional period, pending the incorporation of a joint stock company pursuant to the law "On Entrepreneurs" not later than 6 months after the enactment of the law. It envisages the preparation of ministerial functions from the functions of the railway joint stock company (Article 3.5) and the stripping out of non-transport social activities (Article 3.6).

Discussion following the preparation of this draft law suggests that it would be more appropriate for the transition to be achieved through an order of the President rather than through legislation - for parliament to legislate as envisaged in Article 3 of this draft might have constitutional implications. The draft was a suggestion on how the transition might be achieved; the important issue is that a transition of the kind envisaged will be necessary.

Article 4.

This provides that the Law on Entrepreneurs shall apply to the railway joint stock company; that the state owned shares in that company be under the power of management of the Ministry of Transport and allows for an ongoing and developing system of re-organisation on commercial principles.

Article 5.

This retains Article 3 of the present law.

Article 6.

This declares that the railway infrastructure shall always be the property of the state; it envisages the infrastructure being managed by a railway enterprise in accordance with a contract entered into with the Ministry of Transport. In the context of the present re-organisation, the contracting railway enterprise will be the present railway administration when established as a joint stock company.

Article 7.

This incorporates Article 5 of the present railway law.

Article 8.1.

This follows the principles enshrined in EU Council Directive 91/440 in providing independence in the direction management and administration of railways. It recognises the need for Georgian railways to be managed according to commercial principles and is transparent accounting in respect of infrastructure, passengers and freight.

Article 8.2.

This envisages a formal business planning process requiring Georgian Railways to operate on the basis of 5 years, "rolling" business plans.

Article 9.

This deals with public service obligations and non-commercial services imposed by the state. It recognises that the government should be made liable to pay compensation for the losses thus imposed.

Article 10.

This provides freedom to railway enterprises to set tariffs in respect of freight transport save only where protection is needed where monopoly situations arise.

Article 11.

This deals with the management and operation of the railway infrastructure; it sets out the functions of the Ministry of Transport, the system of management of the infrastructure on the basis of contracts entered into with railway enterprises and a regime of charging fees for the use of the enterprise. It provides for the licensing of railway operators and the provision of access to the infrastructure to railway operators on a non-discriminatory basis. By comparison, EU Council Directives 95/18 and 95/19 (as well as 91/440) adopt a like approach.

Article 12

This Article provides for the supervision of railway safety to be undertaken on behalf of the state by the Ministry of Transport. Arrangements made for the appointment of inspectors and for the making of regulations. This Article incorporates elements of the present railway law - for example, Article 7.

Article 13

This Article incorporates the provisions of Article 8 of the present railway law.

Article 14

This Article incorporates the provisions of Article 9 of the present railway law.

Article 15

This Article corresponds with Article 10 of the present railway law.

Article 16

This incorporates the provisions of Article 11 of the present railway law applying the legislation of Georgia to the terms of employment of staff. It also provides for the making of regulations by the Ministry concerned with the training of specific categories and employees and the certification of their competence and compliance with medical standards.

Article 17

This Article incorporates the provisions of Article 12 of the present railway law.

Article 18

This applies TBILISI time to railway activities.

Article 19

This deals with delay and follows the provisions of Article 15 of the present railway law.

Article 20

This deals with compulsory insurance in respect of injury to passengers and follows Article 16 of the present railway law.

RESTRUCTURING OF THE AZERI RAILWAYS

HUMAN RESOURCES

RESTRUCTURING OF THE AZERI RAILWAYS
HUMAN RESOURCES

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This project is financed by the European Union's Tacis Programme, which provides grant finance for know-how to foster the development of market economies and democratic societies in the New Independent States and Mongolia.

1. HUMAN RESOURCES

1.1 Objectives

The objectives of the Human Resource report on Azerbaijan Railways are to:

- Establish what Human Resource policies and procedures are in place, the extent to which they are followed, how they rate against best established practice and the need for any essential changes.

- Establish skill levels and determine training gaps within ADDY, particularly at Management and leadership levels. Make recommendations on Education, Training and Developmental interventions to bridge those gaps.

- Identify Training and Development activities to support the ongoing development of a Leadership culture.

- Examine and make recommendations on downsizing taking into account the facts, impacts and cultural context both within ADDY and within Azerbaijan as a whole. The cultural context in ADDY will take into consideration the management style and the role of the trade union. The facts within Azerbaijan will identify the realities of the Social Safety Net and the degree to which this will help or hinder the potential success and pace of the programme to reduce/shed activities and staff numbers (downsizing).

- Identify the key issues in implementing a change programme and make recommendations to deal effectively with them.

- Review the internal communications and consultative mechanisms and where necessary make recommendations designed to ensure best practice in communicating information on business performance and on the process of change. Emphasise that all communication places the business imperative as the prime determinant in future decision taking.

- Investigate the development and provision of a computerised Personnel information system (CPIS).

- Support the overall project regarding Human Resource matters and ensure that the capability and gearing of the organisation, from a Human Resource viewpoint, is fully considered in developing business plans for the future.

In seeking to achieve these objectives there is a recognition that there must be a balance between the urgent need to change and the retention of the positive aspects of ADDY, particularly the operational and technical skills, morale and commitment of the employees. It is also fundamental to be fully aware of the social situation in Azerbaijan.

There is high unemployment and while the Social Safety Net has been revised positively it is still inadequate to overcome the issues posed by overstaffing and the use of a western style severance programme as part of a downsizing initiative. There is no doubt that while the staff of ADDY, with whom the consultant met, have a full commitment to the need for change, they are also informed by a strong social conscience.

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1.2 Current Situation

1.2.1 Structures and Staffing

Structure

The structure in ADDY has been undergoing change. A regional structure has been changed to a functional one, although for reasons of geography, the Nakichevan regional operation has been retained. The new structure is unwieldy and the number of Deputies and function heads reporting to the Head of the Railway, while allowing for direct two way communication, is patently inefficient and does not indicate a high level of use of, or indeed trust in, the concept or process of delegation.

Staffing

The following staff numbers are based on figures from the head of the statistics department at 19.08.98.

BAKU DIVISION	8772
GYANJA DIVISION	6585
NAKICHEVAN DIVISION	5854
UNITS ATTACHED TO THE RAILWAY	9512
INDUSTRIAL ENTERPRISES	652
SUB TOTAL	31575
EDUCATIONAL INSTITUTIONS	3697
MEDICAL AND SANITATION SERVICE	3934
TOTAL RAILWAY EMPLOYEES	**39206**

Units attached to the railway include a wide range of activities, the main ones being administration, passenger services and wagon depots.

A restructuring of the railway was being finalised at the time of the specialist's visit. This involved a change from the Regional structure to one based on functional departments as shown in the following table. Full details of the changes, particularly the allocation of staff within the new structure were not made available to the expert. Therefore the allocation below is for illustrative purposes only. It is not official but based on discussion with a number of managers within ADDY.

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Railway administration		468
Railway departments		
Traffic service	4291	
Track	3421	
Signalling	1456	
Energy supply	1221	
Locomotive	3119	
Wagons	2987	
Civil construction	949	
Passenger traffic	3545	
Railway construction	739	
Technical Supply	145	
Water supply	362	
Sub -total Railway departments		22235
Nakichevan division		5854
Railway organisations		3018
Total Railway Operations		31575
Educational Institutions		3697
Medical and Sanitation Service		3934
Total railway Employees		39206

For geographical reasons, the Nakichevan region was retained, so the net result of such change is diminished by the inability to fully implement it.

The use of differing organisation charts within ADDY at this stage is not, in itself, aproblem. It may, however, indicate differences, even if only in interpretation, which would not be helpful in establishing an agreed base as the change process moves forward. Such an agreed base is essential to establishing the credibility that is fundamental to the acceptance of the change message that management will be communicating to the employees. There will be sufficient divergence of opinion within the workforce on what needs to happen within the company. Management failing to agree on such basics will not be helpful in establishing credibility.

The staffing levels shown do not match exactly figures sourced by others directly from the Departments concerned. Differences may be explained by issues of employee status, or timing of the compilation, these not being uncommon causes of difference in most organisations.

Full agreement on staff numbers will be vital to the development of consistent Human resource policy and procedure and for the development and maintenance of an on-line Human Resource data base. It is also highly important in the short term when Strategies are being developed for the dissemination of the Company's mission, objectives and change program.

Below, a further allocation of existing staff numbers is shown. In that case the exercise is designed to show a planned staff reduction and the allocation is based on the proposed Strategic Business Units as detailed in the Institutional Report.

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1.2.2 Staff Reduction

It could have been expected that the enormous decline in traffic would be reflected in a reduction in total employment as the general directive of the Government and the will of ADDY
is to reduce staff levels where possible. Additionally, there is no Government directive to retain unneeded staff for social reasons.

There are various estimates of the exact reduction since independence. One source suggests a reduction of 9,000 staff between 1990 and 1998, another that it was in excess of 10,000 since 1991, with the main reductions taking place in 1993 and 1994. Whatever the exact figures, there has been a substantial reduction in the total number of staff attached to the Railway in the last 10 years. A wide range of methods was used in achieving this reduction.

'Voluntary' termination. However, in recent years many have left due to non-payment of wages and bonuses, low pay, and uncertainty about continued employment. While those leaving may not have been selected by ADDY, and in that sense it was not compulsory, the culture and context was certainly 'push' rather than 'pull'

A ban on recruitment. Senior management sources are quite clear that there is a policy on non-replacement of staff who leave. At operations level there is evidence that staff have not been replaced. However there is also evidence that this is due to an inability to pay staff at present and there were clear plans to recruit additional people, For example, one large depot has plans to take on 150 staff, electricians and technologists, with no corresponding plan to reduce the existing workforce by a similar number.

The application of a general policy of reduction is a sensitive matter and there was concern expressed that a blunt approach, a dramatic policy of staff reduction could lead to the loss, and a resultant shortage, of key specialists. These specialists were commented on as core to the future of the railway.

This view has some validity as the retention of specialist staff could also be an important consideration for many of the recommendations emanating from the project as a whole. It is therefore essential that objective criteria, based on the business imperative, are used to determine future staffing levels. The alternative may be a mix of emotion and tradition and is unacceptable.

Poor performance. While the evidence on this is circumstantial, there is no doubt that rules and regulations are painstakingly enforced and it appears that breaches are severely punished - drunkenness being a clear example - on a par with any employment where safety of other employees and of the public are key issues. Disciplinary issues aside it is not clear that poor performance contributed many leavers to the figures quoted.

- **Forcing retirement**. This was much quoted as a contributor to staff reduction. No figures were available. In fact, the actual number of staff still employed who are over normal retirement age was not available. There are conflicting views on the benefits of changing the 'voluntary retirement' rule which allows individuals to opt to remain subject only to a satisfactory medical, Some see it a necessary step and, indeed, an opportunity to release youth into the system. Others see it as an unnecessary loss of invaluable experience and 'wisdom'. This latter is a real fear, particularly in an organisation where there is so little recorded at the procedural level.

Flexible working arrangements. A wide and creative range of flexible arrangements are available, including extended holidays, leave without pay of up to six months, extended maternity leave, job sharing, part-time working. As a principle the concept of any option rather than redundancy is widely accepted.

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Forced breaks. The concept of lay-offs is understood and practised, if reluctantly. The company-Union agreement is evidence of the view that, even when employees must part from ADDY, there is a singular commitment to re-employ them as soon as circumstances allow.

Retraining. The approach to training within ADDY supports the idea of 'multi-skilling'. Employees are trained in the widest possible range of jobs. They acquire pay increases based on this skill acquisition and the management at local level can deploy trained staff as the need arises. This, on the face of it, overcomes a major difficulty experienced in Western companies when staff reduction is inevitable where staff are not able, or willing, to take on the work of terminating employees. In ADDY staff already accept that they are able, and paid, to carry out a wide range of tasks. Whether this acceptance would remain in the emotional context of compulsory redundancies is, of course, not known.

Divestment of activity. In recent times the best example of this is the Road Building section which resulted in 1172 staff being transferred from the ADDY payroll. Obviously the transfer of Education and Medical Services from ADDY to the relevant Government departments would allow for a further reduction in total staff by over 7,000 people. The transfer of Kindergartens and Lycees to the education system is, apparently, being actively sought by the Education Department. The transfer of the medical facilities is less clear-cut as there are issues of investment as well as the sensitive issue of staff benefits which clearly affect all of the employees.

The application of a non replacement policy does not appear to be in conflict with the principles outlined in the Company Union Collective Agreement, particularly the principles of non-compulsory severance and a commitment to retraining.

1.2.3 Pensions and Retirement

Current situation

Normal retirement age for men has been 60, for women 55. For particular categories of worker there is a form of 'grace' retirement which reduces the retirement age to 55 for men and 50 for women. In ADDY the main group of employees qualifying for this category are locomotive drivers.

However, employees scheduled to retire may opt not to do so and can remain in employment indefinitely, subject only to a job related medical examination.

In 1997, alterations were made to the national pension system which increases retirement age by two years. This is being effected through a six month increase over each of the following four years. Some job categories have been removed from the 'grace' pensions category, although not, apparently the locomotive drivers. These changes are not helpful in reducing ADDY employment levels in the short term.

However a third change, a 50% reduction in pension to those who continue working, would be marginally helpful in tackling the numbers opting to remain in employment after normal retirement age. In addition to the financial implications this change sends a clear supporting signal that the option is not being encouraged.

In 2000 the success of the changes and the demographics at that time will again be reviewed and further adjustments made as required.

Future Plans

There is currently a major review of the national pension system. The State Committee for Pension/Welfare Reform, chaired by the Minister of Labour and Social Insurance, is currently reviewing the system and the following are indicators of likely findings:

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- A new system is required with a fairer, more flexible approach based on the individual
-
- A basic pension would be provided, giving security to all and supporting the existing non-contributory old-age pension and the disability and disablement allowances. Funding would continue to be from the state budget

- Individual pensions would be payable, based on contribution, and therefore, effectively based on service and salary levels of each person. The contributions would change to, approximately, 5% from the employee (currently 1%) and 8% from the employer (currently 35%)
- Legal provision would be made for private pension schemes

If these changes are implemented then, in the long term, retirement will become a far more attractive option than at present. In the short term, however, little will change in terms of the attraction of retirement as an economic option.

ADDY will save in terms of employer contribution. (Note: it appears that the existing company contribution of 1% of total payroll to the Employment Fund will continue).

The state will benefit through a substantial reduction in annual budgetary funding of pensions and will also enjoy the benefits of the building of an investment capital fund for Azerbaijan as a whole.

1.2.4 Redundancy

There is an understanding of the concept of job redundancy and an acceptance that it is inevitable as the economy reforms, both through reduction in state employment and the ongoing likelihood of, higher risk, private companies increasing and reducing employee numbers in a cyclical way.

By western standards the redundancy rules are modest but most of the core principles are established. The main aspects of the redundancy rules are as follows:

- An employee is entitled to two months paid notice that there job is redundant
- During that two month period the employee is entitled to spend time seeking alternative employment
- If they have not found alternative employment at the time of leaving then they receive an additional months salary
- If after a further month they are still unemployed, provided they have registered with the employment service or an employment agency, then they receive a further months salary

There is, also, a widespread acceptance of the concept of short-term layoffs. This is built into the ADDY Company-Union Collective Agreement, the main condition being a commitment to recruit from such employees in the event of future vacancies arising.

1.2.5 Further Analysis

It is essential to recommendations on Human Resources that further, detailed, analysis is carried out. The lack of a comprehensive on-line data base is a major difficulty. For example, detailed analysis of employees by category, skill-set or age distribution was not possible as part of this study.

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1.3 Human Resources Function

The central HR department of ADDY is small. It reports to the Deputy responsible for staff matters. This deputy also has responsibility for buildings, printing, depot furniture, the library, and the medical and educational services.

The main functions of the HR department are:

- Recording changes to staff information and recruitment and promotion activity, submitted by local HR functions and head office departments. The central HR department itself plays no active part in these matters
- Auditing of local HR departments to ensure compliance with rules, regulations and procedures.
- Organising of an annual 'conference' where each local unit reports on the activities for the year and discussion takes place. Without attending such a conference it is difficult to comment on the openness, but comments suggest that it is mainly factual reporting and listing of deviation from rules and procedures
- Assisting with the negotiation of the company union collective agreement
- Maintaining organisation charts of ADDY
- Administration of service awards.

There are no computers in use within the HR function.
Payment of wages is a finance function. Responsibility for the application of the salaries, wages and bonus elements of the collective agreement also appears to reside with finance. Statistics in relation to staff numbers are the responsibility of the statistics department.

Communications is traditional, with a cascading process through group meetings. Many meetings are union led, for example, all of the discussion and consensus seeking meetings at local level to do with the collective agreement appear to be organised through the union. There is no evidence of use of notice boards or of using meetings to gather feedback. The notion of informing a superior of an alternative after a decision is taken is not normal. The central HR function plays no apparent role in communications either from a policy or practical point of view.

There is no apparent current role for HR in the development of strategies for the future other than to develop clear rules for all eventualities. This strategy is understandable in the present state of development of culture but is not conducive to change. The current 'freeze' approach will need to be superseded by an 'unfreezing' if the thinking styles are to be challenged. Dealing with the unknown in a creative way does not appear to be the norm. Again this is understandable given the need to re-establish the very basics of running a railway that has been the priority since the difficulties of recent years.

There is no training function as understood in western organisations and there is no strategy or programme of management development. There are no training guidelines or programmes.

Some limited use has been made of the Polytology Institute for a Management Development programme but it is not clear that this was a HR led initiative. The HR Manager appears well educated and knowledgeable on HR matters and carries a wide brief. He plays an active role in industrial relations.

There appears to be significant devolvement of activity to local level in relation to all HR matters. Local HR functions exist in all the major depots, stations and at regional level in operations. Those encountered were, in the main, engineers or technicians and had trade union experience. In this sense they are similar to many Personnel Managers in the UK and Ireland in the 1960s and '70s as the profession evolved and prior to the development and

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spread of professional HR education. Up to 100 local staffing and training officers attend the annual review conference.

The collective agreement is an 'umbrella' type with much freedom given to local units to decide on staffing levels, pay rates and bonuses.

There is no evidence of the use of computers in any HR activities. This poses some serious problems for the change process. The absence of a computerised personnel information system (CPIS) can be rectified, with application of resources, in the short term but reliance on manually generated reports and the culture which finds this level and speed of response acceptable, is of greater concern.

1.4 Education and Training

1.4.1 General

Normal schooling in Azerbaijan is from 6 to 17 years of age and is still based largely on the FSU system where Kindergarten is followed by Lycee. At 15 years of age, students can choose to attend a Teknikum (Technical school) to pursue more vocationally based education. Following two to three years at a Teknikum they graduate as skilled workers. The majority of students continue their general academic education to 17 years of age.

Unlike many other railway companies in the FSU, ADDY retains it's schools. There are some 43 Kindergartens and Lycees in the system with a total staff of approximately 3,500. These staff, while paid by the Education system directly, are ADDY employees and as well as receiving all the attendant benefits, take up valuable management time that needs to be devoted to the essential change process facing the railway. It appears that the Department of education want to take the schools into the mainstream system. The leadership within ADDY's school organisation do not appear to be adverse to the idea. There are funding issues to be addressed, particularly construction and refurbishment which is currently carried out, and paid for, by the railway.

While English is taught more widely in school than before, there is little evidence of its presence or use within ADDY. Third level Institutions, both public and private, with which discussions were held, regarded fluency in a European language (preferably English, but also German and French) as an essential prerequisite to their provision of effective Business Education and Management Development.

1.5 Technical Education

To date most initial training has taken place in the Teknikum attached to the railway or in various faculties of universities and Polytechnics .

Most training within the railway takes place post-recruitment and is on-the-job. There is no evidence that it is business driven.

The Teknikum

This has an academic staff of about 100 and sees itself as having been the leading Teknikum in the FSU. Some 70% of management staff in ADDY are , apparently, former pupils. Despite recent investment and refurbishment, the level of equipment and facilities is still far short of that required to be a driving asset to the railway in a time of change.

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The management of the unit does see the need to change but that change is described very much in terms of a return to it's former role, albeit with greater resources.

Where training is taking place, both day and evening courses are run making maximum use if the facilities that do exist.

In former times all graduates of this school were automatically employed by the Railway. Now, the numbers have reduced and selection is based on results. There is still a belief among some connected to the centre that it's former role can return in full.

Although training in computers has taken place there was no evidence of computer equipment or facilities.

There is no evidence that the training planned is based on the business needs of the railway.

The future plans include:

- A greater involvement in research activity
- English language training
- Develop into a college placed somewhere between the existing Teknikum practical/craft level and the third level existing at Universities.
- A detailed examination into necessary curriculum changes.

The Railway Institute

There is no formal Institute, the term being used to describe a group of faculties, spread through a number of Universities and Polytechnics, where education relevant to railway employment takes place.

Traditionally, graduates of programmes in these faculties were recruited directly into ADDY. Many do not now follow that route, as vacancies are not guaranteed and many graduates choose to follow other careers, particularly those with better pay and greater likelihood of continued employment and careers.

1.5.1 Management Development

Business education does not happen to the same extent as in other countries and there is a resultant lack of exposure to the theory of modern business management. The very low levels of knowledge of English is a major hurdle to studying Business as a subject. There is also the question of cost. Where such business education does exist in Azerbaijan it is expensive by local standards. In recent years many colleges have departed from their traditional roles and have established more 'popular' programmes in computers, management training and computers. Research would need to be carried out to determine whether such provision is earnings driven or based on particular skills or expertise in any college. A detailed study has been commissioned on the provision of management education and training in Azerbaijan but it was not possible to have the research completed for this report. Two years ago 100 middle and higher ranking engineers in ADDY went through a ten day management programme at the Polytology Institute in Baku.

Polytology Institute

This Institute formerly trained diplomats, civil servants and party activists and has a strong faculty particularly in Politics, Public Administration and Philosophy.

The management course for ADDY included Law, Finance, Ergonomics and Psychology. Those attendees who were spoken with were very positive in their views of the course. It was

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not strong on business philosophy, strategy formulation or practical market-oriented subjects. Fees were charged and paid for by ADDY.

While the Institute has a wide range of skills and experience in management it tends to be public administration rather than business related education. Over recent years a role was developed as an International Business School and has built ties with the Business School of the University of Trent at Nottingham (UK). However the current and future roles are less business oriented.

The Institute also has strong links with international bodies such as UNO, UNESCO and the World Bank for which it has carried out a number of research projects. A Masters level course was started in 1997. The target groups are

- State Officers
- Municipal and Government Administration
- NGOs
- Management of Educational Institutions

More recently they have been asked to take on a more social role, running improvement courses for second level teachers and courses for the unemployed in areas such as Secretarial, Management, Marketing and Finance.

The Institute has also been asked to develop management development programmes, and particularly programmes for local authority management.

There is a computer centre and programmes have been run in this field.

Language Training

The British Embassy in Azerbaijan lists eight English language schools, all based in Baku. The British Council promote English language training and also run a full range of courses leading to the 'Cambridge' group of examinations. They have excellent facilities with an extensive and up to date library and information service. They also act as an exam centre for Distance learning and correspondence courses for Accounting, Medical bodies. Courses have been designed and run for companies including a number of large multi-nationals. They have also run management training courses.

'Know-how' Programmes

There are a number of experiential 'know how' programmes, where middle and senior managers are given the opportunity to gain management development and also to work in companies abroad which are closely allied to their own industry. The most widely known is the Joint Industrial and Commercial Attachments Programme (JICAP) which helps to promote management change and improvements in companies in Azerbaijan. JICAP offers four to five week management training including induction and a three week work attachment in a British company. Candidates need to be 25 - 45 year old managers, graduates or equivalent with good English. They must work in a commercial organisation and the commercial focus in ADDY would lead to favourable consideration, as opposed to working in the Railway 'Department' which could suggest working in a government department, a category of employment excluded under the programme. Current focus of the programme includes Transport. There are also similar schemes run in conjunction with the French and German authorities. Further information on JICAP can be had from the British Council.

Distance learning

There is no evidence of the active promotion of Distance learning in Azerbaijan. Participants apply to overseas providers as individuals. The British Council provides a base for examinations and the fact that materials are mostly in English means that they are a focal

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point for those who are studying. Accountancy and Medical/Pharmaceutical studies are the main courses and there is some evidence of participation in the (UK) Open University. The (UK) Open Business School is not evident. Most of these Distance programmes are long term in nature. They are also very expensive and would require substantial subsidy for any potential participants. Nevertheless, they should be encouraged.

HR Education

It is essential that professional Occupational Psychology and Human Resource education is available for the future development of ADDY. There is no evidence of such training being currently available in Baku.

1.5.2 Recruitment and Selection

Recruitment is normally into base-level jobs - labouring, clerical, first level technical and engineering. This is mainly through the training centre (formerly the Teknikum) and the faculties comprising Railway Institute. Graduates of these institutions are currently guaranteed jobs in the railway although many are apparently opting out and are pursuing careers elsewhere.

All jobs are graded according to a nomenclature which lists the qualifications required. These are specific formal qualifications rather than competencies. Over the ensuing years staff are rotated through different departments and trained in specific skills. Mostly this training is on the job. When staff pass relevant exams they are qualified to move to the next level. For operational, manual and skilled jobs, selection is dealt with at local level. The commission or panel will be formal and will include the local manager, the HR representative, the trade union representative and whatever local manager has ultimate responsibility for the job. Factors such as performance, reliability and discipline are taken into account. Jobs are not advertised as it is felt not to be necessary. This is the opposite to the open competition approach of many organisations in the west but is in line with the thinking of most progressive organisations where management decide who is qualified for consideration for any job. There is scope for abuse of the system where qualified candidates could be excluded for extraneous reasons. There is no evidence that this, in fact, happens and the procedure should not be changed. It does need to continue to be controlled and audited to endure objectivity and fairness.
There is no formal skills inventory or succession planning system in place.

1.5.3 Job Value

The source for determining Job Value is the 'National Job Coding System' which lists all jobs along with the qualifications required to attain that level. No opportunity was available to examine this book in sufficient detail but it appeared to be similar to DOT, CODOT and other systems used in USA, UK and France.

1.6 Trade Unions and Consultation

There is one trade union within ADDY, The Trade Union of Railwaymen and Transport Builders. Membership of the Union in ADDY is claimed to be universal.

The relationship between the railway management and the Trade Union is defined in the Collective Agreement. This is an 'umbrella' agreement and is negotiated every two years. The General Provisions of the agreement are normal Western standards with, for example:

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- Change only through mutual consent
- A disputes procedure followed by arbitration aspect that refers lack of agreement to the Law on Trade Unions and the Law on Collective Agreements
- The introduction of changes and additions, including a joint meetings process between the management and the Union Presidium
- Commitment to enter negotiations on change
- Recognition of the Agreement as the basis for defining and regulating the mutual obligations of the parties.

At local level an agreement is negotiated on an annual basis, covering issues such as working conditions at the location, leave entitlement, bonus, working time, rest breaks and so on. The tradition is to seek and gain consensus on all issues.

They also play an active role in day to day running of the business. For example, they sit on all 'commissions' deciding on promotional appointments. The union has extensive offices in railway head office.

There is commitment to the options which must be pursued in the event of a reduction of activity in ADDY. Severance is to be mainly voluntary and there is a commitment to explore a whole range of options before employment would be permanently terminated. While recognising the realities inherent in a change process, it reflects the high levels of unemployment, and the relatively high levels of pay and benefits of railway employment.

1.7 Corporate Recovery

1.7.1 Restructuring

All of the conclusions and recommendations within the HR report are based on the need for radical restructuring of ADDY into Strategic Business Units as detailed in the Institutional Report. Without the full commitment to implementation of the necessary restructuring, the success of the change process will be seriously undermined.

The restructuring of ADDY, particularly into Strategic Business Units, will be a complex and difficult task. This complexity and difficulty will be dramatically increased if it is carried out at the same time as a major reduction in staffing levels.

An in-depth assessment of competencies is required particularly at management/leadership level. This will allow for the fact that many of the employees, even at Management level, have not been exposed to broad Management development.

The Jobs Classification system, currently in use, has been a very worthwhile and effective system. However it is restrictive in the context of future development and there needs to be a broadening of the analysis of each job and the introduction of the concept of competencies as best practice.

Consideration should be given to the use of diagnostic tools and feedback sessions particularly for managers. A difficulty in doing this is the lack of knowledge of English, many of the better tools in this field having been developed in the UK and US.

It is essential that detailed plans for staff reductions, showing clear time lines, are developed.

These

- must be aligned with investment plans and
- must also take account of short term peaks where additional development, training and parallel activity is required.

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The transition will require a detailed Job Design process resulting in role descriptions for all jobs. These should be accompanied by person specifications, using competencies for management and specialist jobs. A Skills Inventory must be developed for all key staff using the competency concept. This will enable the building of a Succession Plan, a more effective allocation of staff and a more effective and focused programme of retraining where this is necessary.

1.7.2 Management of the Change Process

The planning, facilitation and management of a change process is difficult in ordinary circumstances. This change initiative is further complicated by:

- a lack of experience at leadership level and at employee level of driving change.
- serious budgetary considerations in terms of the speedy investment required in the railway and in technology.
- similar budgetary constraints in installing supported severance arrangements to achieve downsizing targets.
- a lack of fluency in the English language, restricting access to much of the literature and case material on change management.
- the lack of a computerised data base on the human resource within ADDY.

It is essential that those who are taking ownership of the process be fully supported in all of these areas.

Additionally they need the ongoing support of change teams to research, facilitate, plan and monitor the process prior to launch, and on an ongoing basis, as implementation takes place.

The senior Management will need to be guided through the development of a comprehensive strategic plan.

1.7.3 Change Teams

Teams need to be established to support the change process.

The core team must report directly to the Chief Executive Officer and must be established and functioning effectively at the Strategy Formulation and objective setting stage. The establishment of further teams to support each senior manager will then follow to ensure that the change process maintains momentum and critical direction.

These teams will report to the senior managers who are leading the change implementation and will focus more on the achievement and monitoring of objectives and the tactical elements of the process. The individual team members must be carefully selected and, while specialist knowledge of the railway must be within the teams expertise the individuals must be selected more on their possession of the relevant competencies (leadership energy, independence of thinking etc.).

Change teams need to be described, with Job Profiles and Person Specifications for each role with the specifications using competencies to describe the key attributes required.

At a time of staff reduction there must be maximum sensitivity to the recruitment of new staff. This must be kept to the minimum necessary and should only occur where the skills are urgently required, and where the lead-time for acquiring skills would be too long for existing staff members. As far as possible membership of change teams should come from within the Railway and the workforce needs to be trawled to identify potential team members.

Team members need to undergo education and training particularly in Strategic Management, Objective Setting, Team working, Communication and Problem solving. They

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must have or quickly develop a high level of skill in computer applications, e.g. Microsoft Word and Excel.

Change teams need to be established as soon as possible, initially with external skilled facilitation and change management expertise, but with team membership resourced mainly from existing employees.

Team members need to have, or quickly achieve, a wide range of skills including leadership, facilitation, change management, auditing and computer applications.

1.7.4 Environment and Severance

General

A key issue in the successful reduction in staff numbers is the gap between the relatively secure employment in ADDY and maintaining that standard of living in the open market place.

As far as ADDY employees are concerned this context is important if they are expected to voluntarily leave ADDY and enter into what many still see as a 'grey' economy. There is no doubt that ADDY is seen as a relatively secure employer, and also as a responsible organisation within the economy as a whole. At less skilled levels of the workforce, earnings levels may not be as great a deterrent to leaving as at the Specialist and Management levels. These, more educated, staff also contain those who will be expected take ownership of, lead and sell the change process, a process which will result in significant reductions in employment levels. All of those spoken with recognised the need to reduce staff numbers but all saw minimum, if any, reduction in specialist staffing levels. ,

As a matter of urgency, there should be a total embargo on all recruitment to ADDY. The concept of job rotation is well established as is the concept of skill enhancement. There is wide practice of staff gaining additional skills , and being paid for them, but not necessarily working in those roles. Therefore there should not be difficulty in filling vacancies through transfer rather than through recruitment of outsiders. Cognisance must be taken, in the longer term, of the need for new blood and detailed analysis must be carried out, leading to a plan to counter any trend to an ageing workforce in the future.

There was an openness among the employees regarding the lack of work and an acceptance of the concept of jobs becoming redundant.

Pensioners have a legal right to choose to stay providing they pass the medical. In a reducing workforce, bringing in new blood is contentious and difficult. This is exacerbated by non-retirement (never mind trying to introduce the concept of early retirement)

The concept of a job being redundant exists and is accepted. However the consequences of mass redundancy is a different matter and the Collective Agreement certainly is clear on the commitment to retain staff despite the downturn in business. It is fair to note that many collective agreements in other countries have similar sentiments despite the acceptance that there can be staff reductions. In many cases they are designed to place a stake in the ground and the removal of the stake is merely a question of cost.

1.8 Planned Reduction

The following is an example of the impact of a planned staff reduction programme for ADDY over five years

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These figures are based on reported staffing as at 19th August 1998. They have been reallocated to the proposed new Directorate structure. This example should be considered in conjunction with the assumptions which follow below.

	Base year	Year 1	Year2	Year 3	Year 4	Year 5
Senior Management	20	20	20	20	20	20
Group						
*Senior Task Group	10	10	10	10	10	*10
Safety and	5	5	5	5	5	5
Environment						
Corporate Services	552	535	500	455	421	388
Freight	3021	2930	2725	2507	2307	2122
Infrastructure	10387	10075	9370	8621	7931	7296
Passenger Services	3473	3369	3133	2882	2652	2440
Rolling Stock	6658	6458	6006	5526	5084	4677
Nakichevan Division	5854	5678	5281	4858	4470	4112
Total Operations	29984	29080	27050	24887	22900	21070
Ancillary Services	9080	9080	8691	0	0	0
*Management	50	50	*50	0	0	0
Railway Enterprises	1389	1389	1000	0	0	0
Social Activities	7641	7641	7641	0	0	0
Total Railway	39064	38160	35741	24887	22900	21070

Assumptions:

1. No reductions are projected for the Senior Management Group or for Safety and Environment
2. Groups marked * will have completed their work in the year indicated and will need to be reabsorbed into normal Railway Management and Administration.
3. A total ban on external recruitment must be put in place immediately.
4. The Nakichevan Division continues to be shown separately despite the fact that this is contrary to the concept of Strategic business Units.
5. Staffing levels in the four Operating Directorates, the Corporate Services Directorate and the Nakichevan Division are reduced as follows:

Year 1. The target is 5% but in Year 1 it is assumed that an effective retraining and transfer system will not be running. Therefore, 3% is used in the breakdown to allow for this. Any

vacancies in excess of this must only be filled using temporary employment contracts, with a maximum term of one year.

Year 2. The target is again 5%. However 7% is used to ensure a combined two year reduction, with Year 1, of 10%. All employment using temporary contracts issued in Year 1

should terminate during Year 2. This means that an effective retraining and transfer system must be in place, and operating, during Year 2 at the latest.

Years 3 to 5. The reduction for each of these years is 8%.

The total reduction over the five years is just under 30%.

6. Locomotive drivers and assistant drivers are still shown in the Rolling Stock Business Unit. They need to be extracted and reallocated, as appropriate, to either the Freight or Passenger Services Business Units. This reallocation will better reflect the activities and staffing of these Business Units. It will not affect the overall staff reductions shown.

Severance Programme

- must be attractive enough to achieve the required reduction.
- will typically include an early retirement option
- will insist that exception must be eliminated (for example all existing pensioners must terminate within a specified time frame. In future all employees must retire on reaching normal retirement age. The current option to remain in employment only subject to medical, must be removed.)
- will use service as a multiplier, thus targeting older employees and freeing up posts for young employees who are likely to be more skilled and more open to change
- will include incentives or options covering education, retraining and possibly financial support in entering self employment. For example, all permanent employees could qualify for educational assistance with fees paid for the first year
- will consider a continuation of the benefits/perks already enjoyed, but only for a specific limited period following termination
- will normally be open to all employees
- will insist that, on application, those who wish to leave do so as soon as is practicable.

An immediate ban should be placed on all permanent recruitment to ADDY.

A serious study must be made of the future shape of the organisation resulting in exact numbers of employees required to make the Company viable in the future. These conclusions along with the business rationale supporting them must be convincingly communicated to the workforce.

The severance package, content and funding must be designed and agreed so that it can be communicated simultaneously to all employees as soon as possible.

The concept of a supported outplacement package should be considered as an alternative to a forced, and expensive, severance package.

Optional retirement with no age restriction must be phased out and normal retirement age applied as the maximum allowable.

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1.9 Culture

To overcome resistance to change and resistance to voluntarily leaving the organisation all employees need to clearly understand the new business reality. That the new company will be radically different from the present one must be at the core of all communications to the employees.

The fact that wages appear to be keeping well ahead of inflation may be a popular trend but it also impacts on people's expectations for their future state within the economy. This could also

impact on rail company employee's expectations as to levels of severance and ongoing support in the event of assisted staff reductions. Failure to match these expectations could result in a greater than anticipated resistance by individuals to voluntary departure.

There is a clear understanding among many managers and within the Trade Union that salary levels will rise significantly as a direct result of the restructuring of ADDY. There is little evidence that these individuals link these expectations to any measurable improvement in business performance.

Clear and early decisions need to be made, communicated and implemented in relation to changes such as:

- the divestment of non-core activity
- the full implementation of a non-replacement policy
- the prompt retirement of all employees at the company's discretion rather than on a voluntary basis
- the immediate implementation of a company wide policy of non-replacement.

Care must be taken to ensure that, in portraying a vision of the future, expectations of pay increases do not militate against severance as a necessary choice for many staff.

1.10 Trade Union and the Collective Agreement

The company-Union Collective Agreement is a very important document:

- as a check list of what is at issue in terms of work practices for the future organisation
- as a listing of all the terms and conditions enjoyed by employees, pensioners and certain ex-employees of the railway company. These must be dealt with in some predictable way if they are not to become a source of future undermining of railway costs
- as a source of the undertakings which are in place relating to employment, voluntary severance, lay-offs, retraining and so on
- as an indication of the role of the Trade Union as a full participant in the decision making process
- as an indication of monetary commitments entered into to spend substantial amounts of money on a range of benefits over the next two years.

There must be a detailed analysis of the exact meaning and practice of each section of the Collective Agreement particularly commitments to expenditure and job protection.

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A strategy must be developed as to how to move forward effectively given the existence of the Agreement and the general legal context.

There must be immediate opening of discussions with the Trade Union on all aspects of the proposed changes.

1.11 Education and Training

1.11.1 Training Needs

There will be substantial training needs arising from the proposed changes and full training needs analysis will need to be carried out, and updated on a regular basis into the future.

The following is an example of a needs analysis, the needs identified by a group of experts during recent visits. In addition the views of key managers within ADDY are incorporated into this list. The list is used for purposes of example and is not exhaustive.

Range of training needs identified in a sample of key management areas:

- Financial Accounting
  - Introduction to western accounting principles and concepts
  - International Accounting Standards and the preparation of accounts in a format suitable for presentation to International Financing Institutions and potential investors
  - Modern accounting system, cost classification and coding systems
  - Creating cost centre and profit centre reporting systems in a modern railway

- Management accounting
  - Budget preparation - involving the management team in the budgeting process
  - Transfer of responsibility for budget preparation to cost centre managers
  - Preparation of the corporate financial plan
  - Financial Control in the modern organisation
  - Variance analysis techniques
  - Cost accounting - calculating unit costs, cost allocation and apportionment, overhead absorption, etc.
  - Financial information for decision making, marginal costing
  - Activity based costing

- Financial Management
  - Management of working capital
  - Treasury management

- Finance for non-financial managers

- Traffic costing
  - Modern railway costing techniques

- Commercialisation in Business
  - Freight accounting systems
  - Developing cost centres
  - Contract development
  - Negotiation techniques
  - Customer orientation
  - Marketing

- Computer applications, particularly Word, Excel, Access, PowerPoint

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- Environmental management
  Environmental awareness
  Impact assessment techniques
  Environment design
  Regulations and regulatory obligations
  Environmental protection and pollution control equipment
  Safe practice in materials handling

Key Training activities

The following is a summary of the key training activities which need to take place and which should form a major part of the task list for the Training Manager, whose appointment is recommended below:

- identification of competencies for senior management and leadership positions and assessment of employees who show potential for entry to these roles.
- to support the understanding of the business rationale for the change, there needs to be business education for key managers in the communication chain and basic business literacy training for all employees.
- all those involved in managing, leading and facilitating the change process need support, and preferably training, in English.
- to support the increased need for Human Resource professionals (HR specialists within Business Units) those currently in HR roles and those identified as having potential need to be trained in current best practice
- to support the establishment of an integrated on-line Human Resource database will require training in whatever CPIS is installed and in common computer applications
- identification of training needs for all core groups and the development of training plans
- based on analysis of new roles and as staff reductions take effect a detailed retraining plan will be required
- or all future training serious consideration must be given to the establishment of in-house training activity rather than the expensive external activity currently in place. This should include the buying-in of expertise where this does not currently exist within ADDY
- All training needs to be co-ordinated through the change groups. It is essential that all training is geared towards the new organisation or to the process of getting there. Any non-essential training may be a drain on resources and if it is seen to take place may also undermine the credibility of the change plans. Much of the training requirement will emanate from the change groups. Where requests arise elsewhere they must be evaluated and cleared as in line with the company's objectives.
- the concept of competencies needs to be introduced. All those involved in training (trainers, change team members) should be at least exposed, and preferably trained, in the concept.

The post of Training Manager for ADDY should be established right away, reporting directly to the most senior manager responsible for HR. The list of key activities, shown above should be the basis for the initial task list for this job. If not already professionally qualified, the appointee should undergo formal training immediately on appointment.

A full Training Needs Analysis should be undertaken as soon as possible. The results of his analysis should form the sole basis for any education, training and development programmes.

A management development programme should be researched and implemented as soon as possible. This programme should be focused on skills and should make full use local providers in Baku. The cost and the immediate need for skill enhancement requires that the majority of developmental activity should take place locally rather than outside Azerbaijan.

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The Teknikum should be reformed as a Training Centre and used primarily (and preferably solely) for in-house training. This Training Centre should report directly to the Training Manager.

A 'Train the trainers' programme should be implemented urgently to establish a resource for the identification of training needs and the development of training programmes at all levels. The core group should be developed from the staff of the existing Teknikum/Training Centre.

There are immediate needs in skill, knowledge and attitude development and programme for these should be activated immediately. Work should also commence straight away on a second phase focusing on longer term needs.

An English language training programme should be implemented as a matter of urgency.

1.11.2 Human Resource Function

Despite no apparent formal HR training the depth of experience within the HR Department needs to be retained although developing Strategies to deal with future Partnership may be set elsewhere e.g. within the high level Change Team.

The expansion of HR to a presence in each Business Unit and, more immediately the need for a key group with knowledge of and commitment to the change process will require an increase in the number of HR professionals. Such a group cannot be resourced solely from the existing HR Department and there needs to be an early identification and development of a cohort of such HR professionals. This must happen at an early stage and the identification should focus on the full current HR group, that is, including local staffing and training specialists and the staff of the Teknikum/Training Centre

There will be a requirement for the development and dissemination of best practice policies and procedures to bring the company through the change process and to maintain the culture and practices required to continuously improve in the future.

Those identified as having potential, should be given a formal HR education in the concepts and practices of modern HR Management. This development process should start as soon as possible.

1.11.3 Communications

Communications is key to:

- the roll-out of the plan and the communications to all employees of the mission and objectives of the new organisation. Without this there is less chance of local implementation of plans that will support the overall objectives. In fact failure to communicate effectively will be more likely to result in counterproductive activity at local level which will undermine the whole commercial thrust of ADDY for the future
- the maintenance of an up to date HR database which will depend on effective upward as well as downward communication
- the periodic communication of progress as the change takes effect – which will be vital to morale as individuals are expected to make and take the risks necessary to maintain momentum as the plans take effect. The use of feedback is essential to maintaining morale
- the speedy response to any variation in the Change process so that contingency plans can be effected.

A key part of any change process is the ability to gather information, analyse, communicate decisions, gain feedback, keep people - management and those affected - appraised of progress, changes of direction, morale boosting achievement of goals and the passing of milestones.

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This communication must be timely, fast and complete.

This needs special attention and will need the power of technology and will need those at the core and those delivering and feeding back the messages to be trained, together. All slippage in the process will dilute the change process.

In ADDY there is no strong evidence of full or frequent use of the range of communication modes that are available and can be used.

A comprehensive Communications Strategy must be developed to ensure the full range of communications tools is utilised to ensure the change process is understood and effected at all levels of ADDY. It is essential that this is driven from the top of the organisation and that those in charge are committed to this principle.

The following key messages must be core components in all communications:

The business imperative is the fundamental driver of the change programme.
Downsizing is not an objective in itself but a direct consequence of modernising and restructuring the railway.

1.12 Information Systems

Access to information on the Human resource in ADDY will be crucial to any attempts to restructure.

There is little evidence of the use of Computers. Information storage, retrieval and analysis is all manual and at a very basic level.

There is an urgent need to source, evaluate and install a Computerised Personnel Information System (CPIS). As the existing HR function will be busy on staffing related matters and, given the critical urgency of the need for a CPIS, this project should be commissioned by the Head of the Railway and the team should include an MIS expert and a HR expert. It is recommended that the HR expert be independent of the current HR structure. On the appointment of a Strategic change team, the project should report to that team until it is up and running and can be passed to.

There will be a short-term requirement for additional people from within the system to gather and input information on staff as well as the provision, also short-term, of two to three additional Personal Computers (PCs). These units will be allocated to HR in the longer term.

If a Business Unit structure is to succeed, then access to on-line HR information is essential within each Unit. Local HR Departments within each of the Units will generate a requirement for an additional 10 PCs.

A second need is for the placing of the HR system on-line in any plans for the networking of ADDY as a whole.

The CPIS should be integrated with the payroll system and although Payroll, as the disburser of monies should be part of the Financial function, the driving and control of the information should be ultimately from the central HR Department.

It is also possible to integrate electronic attendance systems which drive payroll and also feed into the hugely time consuming absenteeism control system. The distribution of such a

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system is, admittedly difficult where employees are in remote locations and is dependent on the computer network being in place for operational or commercial reasons.

In the long term the existence of a CPIS will empower the Human Resource function, give confidence to the professionals involved and align them as key supporters of the change teams and the change process.

There is an urgent need to install a Computerised personnel Information System.

This is estimated to be 13 PCs along with normal software and peripherals:

CPIS project: three PCs
Central HR Department: an additional three PCs along with the usual peripherals.
Strategic Business Units: two PCs in each local HR Department, a total of ten units, along with the usual peripherals.
Change Teams: There will also be a requirement for those in the Senior level Task Force and the Business Unit change teams to have access to the HR database. It is assumed that there hardware needs will already have been addressed.

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RESTRUCTURING OF THE AZERBAIJAN RAILWAYS

MIS PLAN

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1 MANAGEMENT INFORMATION SYSTEMS (MIS)

1.1 Introduction

The general situation in relation to computerisation appears to be one of waiting for the availability of funds and the implementation of the TACIS Trans-Caucasus fibre-optic communications link. Examples of the hurdles which have to be crossed in the implementation of integrated information technology systems include:

- the virtual absence of communications infrastructure,
- rival propositions for the development of communications infrastructure,
- an apparent tendency to use computers to replicate historical systems,
- the absence of experience in the development and running of integrated computer systems,
- the absence of a co-ordinated approach to coding structure development - for example staff serial numbers are unique to each function / enterprise within the Azerbaijan Railways,
- the duplication of data streams - for example freight tonnage is reported by a number of separate systems,
- the current concentration of data collection in the Baku Central Computer Centre.

This restructuring, which will reflect an enhanced business focus, will result in a new organisational structure with associated management information needs.

1.2 Current MIS

1.2.1 Central Control under Soviet Union

Computerisation in the Azerbaijan region in Soviet times was limited to a few core operational systems based on 1970's computer hardware. The computers and computer systems inherited from Soviet times have been abandoned by Azerbaijan Railways. (ADDY).

1.2.2 MIS Developments in Azerbaijan Railways

Management information systems in the Azerbaijan Railways are almost entirely manual with some being based on hand written reports. Systems emulating the functionality of the abandoned Soviet designed systems have been implemented on PC's which are operated in the Baku Central Computing Centre as if it were a batch mainframe computer centre. Computerisation on the Azerbaijan Railways is at an intermediate stage between the elimination of the computer hardware installed in Soviet times and the implementation of contemporary technologies.

An exception to this general situation is a computerised reservations / ticketing system in Baku passenger station which supports ticket issuing and seat reservations on long-distance trains departing from Baku. The system is based on 26 ticket booth configurations of PC and printer networked over a LAN to a file server in the administrative offices over the central station.

The extension of computing is inhibited by a shortage of finance and the lack of a suitable communications infrastructure. Currently, data communications are limited to 1,200 bps lines between the Baku Central Computing Centre and:

- Beyuk–Kiassik on the border with Georgia,
- Ialama on the border with Russia,
- the Ferry Port on the Caspian Sea,
- the Freight Unit in the ADDY headquarters in Baku,
- the M.P.S. Computer Centre in Moscow.

While the Baku / Moscow link is over a line leased from the Ministry of Communications, the other links are over ADDY private lines. However, data exchanges between this configuration and other sections of the Azerbaijan Railway (including the Baku Central Computing Centre) are based on paper documents. Personal computers (PC's) .in the Baku Central Computing Centre were placed on a local area network (LAN), during October, 1998. It is planned that the implementation of this LAN will provide a basis for the automated exchange of data between personal computers in the Central Computing Centre including the wagon information system referred to above.

Other PC's are operated in stand-alone mode with data being exchanged either by diskette or by reports printed on paper which have to be re-entered into the receiving PC.

1.3 Core Systems

1.3.1 Accounting

1.3.1.1 Accounting in Azerbaijan

The issue of moving Azerbaijan accounting standards towards international standards is currently under review with a completion date in 1999 during the first year of the business plan.

However, current indications are that this review will not result in a total conversion to international standards.

1.3.1.2 Accounting in ADDY

Available information indicates that accounting in the ADDY is essentially a manual process. Accounting in the ADDY continues to be in accordance with the Soviet standards and ADDY take the view that whichever accounting standard is approved by the Government will be implemented by the railway.

1.3.1.3 Accounting & Corporate MIS

A corporate management information system needs both physical and financial measures of performance.

The critical point is to ensure that the data produced by those systems is in synchronisation and soundly based. For example, production costs that are based on standard costing rates that are not contemporary are worse than useless, such costs are misleading. Accordingly, it is essential that the systems that compose the corporate management information system are integrated.

Since the accounting systems are at the centre of the management information structure, it is essential that those systems are integrated. The need for integration increases with the level of diversity in an organisation.

The enterprise concept that is present in the ADDY is evidence of the diversity of the activities in a national railway. It is equally important to know that the costs in an engineering works are under control as it is to know that the transport income projections are being achieved. All these issues are elements of the mosaic that comprises the ADDY. That is why accounting systems in the railway need to be integrated with each other and with the physical measures of performance to enable the business plans to be managed effectively.

1.3.1.4 Characteristics of the Integrated Accounting System

An integrated accounting system will:

- be based on data being entered once,
- support integrated financial and management accounting,
- support comparisons with budget and a previous year,
- support the processing of non-financial data,
- support multiple currency accounting,
- support multiple users in client / server mode.
- have the capacity to receive data electronically from other computer systems,
- have the capacity to transmit data electronically to other computer systems,
- accept transaction input over a network,
- accept journal data by file transfer over a network,
- have a user friendly report writer,
- support the exchange of data with desktop tools such as spreadsheets and word processors,
- include a user access control process based on a hierarchy of needs.

It is expected that an integrated accounting system would, in addition to providing improved management information, yield savings in administrative costs through:

* the integration of data entry into the originating workplace,
* avoidance of duplication of data entry,
* the exchange of data with other systems over the computer network,
* abolition of manual analysis of data,
* abolition of manual preparation of reports,
* improved report production,
* improved access to data on file in the database.

1.3.1.5 Custom written Accounting Systems

The development of a custom accounting system either by in-house or contract systems and programming personnel would not be in accord with current thinking. Current thinking is that it is better to acquire a comprehensive parameter driven package system.

The development of custom written computerised accounting systems has a number of inherent hazards including:

- lack of computer system specification experience on the part of those preparing the user specification,

- limited scope, for example central ledger accounting not integrated with management accounting,

The adoption of international accounting standards would increase the possibility of identifying a suitable accounting package system.

The current transitional status of accounting standards requires that selected computerised accounting system should have the capacity to adapt to the evolving situation with minimum program changes. The installation of an integrated accounting system will demand that there is a corporate commitment to making the changes in processes and procedures necessary for its successful implementation.

1.3.2 Human Resources

Personnel records are maintained manually on paper held in each function / enterprise. Over 60% of ADDY employees are paid through manually calculated payrolls.

In year one of the business plan the implementation of a Human Resources policy within the context of an organisational and management restructuring will require that information on personnel numbers, grades, education, skills is readily available both locally and centrally.

It is essential that figures that are used as the basis of management decisions are consistent and accurate. This results in a need to maintain a close relationship between the Human Resources records of employee numbers and the numbers persons being paid through the Payrolls.

The maintenance of such a close relationship is more readily achieved if both the Human Resources records and the calculation of remuneration are computerised. The ideal solution is a combined payroll / human resources computer system which services the needs of both functions from a common database.

However, the Chief of the Baku Central Computing Centre has advised that the existing computer payroll system, that is used to calculate the salaries of 14,000 personnel, has the capacity to calculate the salaries of personnel in all parts of the ADDY, may be enhanced to exchange data automatically with other computer systems, may be operated securely on PC's in locations remote from the Baku Central Computing Centre, is supported by formal operating instructions in printed form.

1.3.3 Freight Management Systems

Four systems are involved in the freight management process each dealing with freight from a different perspective. These freight systems, that have been developed in place of the abandoned ASOUP system, appear to be in an ongoing process of review and modification with the aspiration of achieving a situation that is superior to that obtaining when the old ASOUP system was in operation.

The continuing close relationship between the railways of the independent States and Russia necessitates the maintenance of these facilities.

1.3.4 Passenger Reservations and Ticketing System

There is a computerised seat reservation and passenger ticketing system in Baku central passenger station.

The system is designed to:

- reserve seats up to five days in advance of the date of travel,
- release unpaid reservations three hours in advance of the time of departure,
- print tickets using numbered pre-printed ticket blanks,
- print sales clerk cash account at end of shift,
- print report on ticket sales per ticket sales clerk per day of issue,
- print report on passenger numbers per destination per day of travel,
- print report on passenger Km per destination per day of travel.

Data on ticket sales is passed on paper to the Baku Central Computing Centre for input into the Passenger Revenue Reporting system. Data on passenger Km is passed on paper to the Statistical Section.

The system is currently limited to main line passenger trains starting from Baku central passenger station. Ticketing computer system configuration consists of:

- 26 ticket booths with a computer and printer,
- a file server and
- a system monitoring computer that displays the level of server activity.

The file server and system monitoring computer are located on the 8th Floor of an office block over the passenger station. The report of ticket sales on a day in September, 1998 showed that total sales were fewer than 1,100 with one ticket sales clerk accounting for 270 tickets and another having as few as 3. This imbalance raises issues such as:

- the need for such a large number of ticket sales booths,
- the management of work flow to the booths that are operational.

During a visit at about 16.00 hours the monitoring computer indicated a very low number of active ticket machines accompanied by frequent peaks of system demand. This pattern of activity points to the possibility of system performance problems in the event of an increased level of activity arising from:

- a greater number of concurrent users,
- an increased number of passengers,
- an increased number of trains.

The Chief Engineer Passenger has spoken of a desire to extend the computerised reservations system to all stations on the main-line from Baku to Beyuk-Kiassik on the border with Georgia – with an expectation that this project could proceed as soon as the Tacis fibre-optic cable is operational.

This proposition, which is based on an assumption that all these stations could be served by a file server located in Ganja, raises issues such as:

- the necessity for having computerised ticket issuing at every station,
- the communications media linking stations to the Fibre-Optic Cable ,
- the response time at ticket issuing computers that are remote from a file server,
- the implications of having two, or more, file servers for system design – for example which file server will be supreme,
- possibility of sharing computers between activities such as passenger ticket sales and freight cashier at smaller stations,
- seat reservation and ticket issuing arrangements for passenger journeys that start in Georgia.

1.3.5 Materials Management

Materials procurement is centralised in the Materials Manager. However, Permanent Way materials are procured directly by that department. The Materials Management function is based on a Central Warehouse complex at Balinjari supported by subordinate warehouses in Kazi-Magomed, Baku Freight Depot, Alyati, Ganja, Imishly and Nakhchevan.

The Alyati warehouse is dedicated to the storage of strategic State reserves. Warehouse managers are held to be personally responsible for the safe-keeping of the materials in their warehouse. Record keeping is entirely manual except in the Balajari warehouse complex where there is one computer. The consultant has not received any information on the software used in this computer.

Materials procurement is organised by the Materials Manager on the basis of annual estimates of requirements made by the various functional and enterprise managers during the last quarter of the preceding year. Warehouse Materials Accountants make a monthly report of stock movements both volumes and values the Materials Manager's Chief Accountant. Inspectors from the Materials Manager's office visit the warehouses at regular intervals and check the physical stock against the reports that have been submitted.

Units wishing to obtain materials from a warehouse place a requisition with the Materials Manager's Office. This document which describes the materials includes a power of attorney

for the person who is to take delivery from the warehouse and a signature of a chief engineer verifying the purpose for which the materials will be used.

Materials issued out of the Materials Manager's Warehouses pass into the responsibility of the recipient and are stored in function or enterprise warehouses pending use as specified.

There is no evidence of a formal system for cross-referencing the stock-holdings by stock item across the wide range of warehouses.

The consultant was unable to obtain details of the numbers of stock items in the various warehouses or of the number of receipts / issues per day, week or month.

1.3.6 Baku Wagon Works

Baku Wagon Works is a representative self-contained enterprise with its own management organisation including director, chief engineer, economist and chief accountant. As such it is representative of the approximately 400 enterprises that comprise the ADDY.

A Profit and Loss Account and Balance Sheet are prepared for the enterprise.

The Baku Wagon Works was one of a small number of Works dedicated to the overhaul and maintenance of tanker wagons in the Soviet Union. This pattern of activity has continued since the establishment of the Republic of Azerbaijan.

During the last quarter of each year the railway, which is the principal customer of the Works, agrees a contract for the number of repairs by type that are to be done during the following year. The price per repair type is based on the cost during the current year adjusted for anticipated inflation and economies during the coming year. This price includes a "profit" component.

Private wagons are repaired under individual contract arrangements using prices that are higher than those agreed with the railway. The money paid by the private companies is paid direct into the bank account of the Wagon Works and in "good" times produces a valuable local cash flow. However, the demand for this work has also declined – in 1998 there are only depot repairs and no general overhauls. The significance of this order pattern is illustrated by the fact that a general overhaul yields three times the income from a depot repair.

Workers are paid, by means of a locally calculated manual payroll, on the basis of the hours that they have worked which are co-related to the numbers of completed repairs. When asked about the use of job costing, the economist stated that it was not feasible to calculate the cost per wagon repair because of the impossibility of allocating overheads such as his salary to individual wagons.

However, direct materials and labour costs are assigned to repair types and overheads are allocated to repair types also. The cost per repair type is divided by the number of completed repairs to arrive at an average cost per repair. This average cost per repair type is compared with the cost used in the annual contract to determine the variation as an indicator of a need for a contract price review.

It was stated that railway contract price reviews usually result in some reduction in the "profit" element in the price.

There is an EBRD proposal for the restructuring of the Baku Wagon Works that calls for a diversification of the engineering activity of the Works to include repairs to all types of wagon. Undertaking repairs on a wider range of wagons would call for a parallel increase in the range of stock items held in Works materials warehouse.

The wider range of activity would call for the introduction of new processes into the production chain in the workshops. While it is unlikely that any job would use all the facilities of the newly diversified workshops it is probable that all jobs would use particular production resources. This divergence in the use of workshop facilities would introduce increased complexity into the scheduling of the workflow through the workshops.

Scheduling would involve balancing competing demands for the most intensively used resources so as to achieve the maximum throughput compatible with the best use of all resources including manpower. In a situation where there was a wider range of wagon types and a wider range of repair types there would be a need to move forward from the historical average cost per wagon repair type into a job costing approach.

A job could be an individual wagon or a batch of wagons. However, experience elsewhere would indicate that having converted to a job approach the tendency is to move on to also having jobs for collective tasks such as the manufacture of wagon door hinges for stock.

Job costing would result in each individual job attracting the costs of direct materials and direct operative hours together with provisions for workshop overheads and administrative overheads.

The need to associate direct materials with individual wagon repairs would require that materials were issued from the materials warehouse on the basis of requisitions that charged the materials to individual wagon repair jobs in parallel with the updating of the records of materials stock-holdings. Similarly, a job costing approach would call for a direct link between the payroll system, that calculated the operatives remuneration, and the job costing system to ensure that sum of the labour costs recovered through the job costing system equalled the total of the wages bill.

The Director of Baku Wagon Works was not receptive to the possibility of introducing computers in the context of his current cash flow situation.

1.3.7 Locomotive Drivers System

Locomotive Drivers daily journals are brought to the Baku Central Computing Centre for entry into a PC based computer system.

The data entered includes:

- locomotive details,
- train crew details,
- laden wagon,
- empty wagons,
- gross train weight,
- hauled weight,
- weight of freight,
- matching tonne Km figures,
- train running times technical (between stations),
- train running times total (including times at stations).

The tonnage figures used in this system are calculated by averages for each type of wagon / traffic combination. Statistics produced by the system are used to assess locomotive operating performance.

1.4 Computer Infrastructure

1.4.1 Baku Central Computing Centre

In Soviet times, railway computerisation in the Azerbaijan region was controlled from Moscow.

Computerisation was focused on operational efficiency systems such as:
ASOUP for wagon control, and
EXPRSS1 for passenger bookings.

These systems continued to be run on 1970's vintage batch computers in central computing centres up to the early 1990's when states such as Azerbaijan became independent. The Azerbaijan Railways (ADDY), recognising that there was no future in those old computers, decided to start anew with contemporary technology and scrapped the old systems.

The continued close operational relationship between the railways of the independent States and with Russia resulted in a need to develop personal computer (PC) based systems that replicated essential parts of the scrapped old systems.

These systems have until now been operated as if there was a mainframe computer in the Baku Central Computing Centre. The central computing centre continues to provide the type of service which was necessary in the days of large batch computers that required special environmental arrangements. That is a centralised data collection and clerical support group which entered data, checked and corrected error listings and distributed printed outputs.

The development of the personal computer and the improvement in communications facilities have facilitated the transfer of these activities out to the functions / locations where the events take place. The Baku Central Computing Centre has commenced this process within the constraints of the availability of computers and communications facilities.

The current and projected portfolio of computer systems continues to reflect the preoccupation with transport operational computer systems to the exclusion of accounting and general management orientated systems.

1.4.2 Computer Hardware

Available information indicates that the current investment in computers is distributed as follows:

- Baku Central Computing Centre has 28 personal computers
- Baku Passenger Reservation & Ticket system has 28 personal computers, there are five personal computers shared between the two land frontier stations and Baku Ferry Port, and there are up to possibly 20 "stand alone" personal computers in various offices throughout the ADDY.

1.4.3 Computer Software

Central Computing Center personnel develop systems using:
SUBD Foxpro, Clipper, C++, Delphi3 programming languages
SYSBASE, InterBase, Oracle database systems,
NetBeUI, TCP/IP, WindowsNT communications facilities.

However, the Passenger Reservations and Ticketing system was developed by a software contractor outside the control of the Central Computer Centre management.

1.4.4 Data Communications

1.4.4.1 Current Data Communications

The ADDY has a very limited data communications network at this time.

The absence of suitable data communications facilities and a shortage of funds is impeding the development of computer systems.

Long distance data communications are currently limited to 1,200 bps lines between:
Baku Central Computing Centre and Beyuk–Kiassik on the border with Georgia,
Baku Central Computing Centre and Ialama on the border with Russia,
Baku Central Computing Centre and the Baku Ferry Port on the Caspian Sea,
Baku Central Computing Centre and Moscow.

These communications links are used for the collection of data on wagon and container movements into and out of Azerbaijan for transmission to Moscow.

The wagon data collection system uses:

one personal computer in Baku Ferry Port,
one personal computer at Ialama on the border with Russia,
two personal computers at Beyuk-Kiassik the border with Georgia,
two personal computers in the Baku Central Computing Centre.

In addition, the **INTERNET** is used to retrieve data on inter-railway wagon settlements by e.mail from the M.P.S. computer centre in Moscow.

As recently as September, 1998, the data transfers involved operators using a personal computer in the Baku Central Computing Centre to collect data from the Ferry Port and border point personal computers twice daily in accordance with a fixed schedule.

The collected data was then transferred by diskette to another personal computer for transmission to Moscow. The data was transferred to another personal computer in the Baku Central Computing Centre for local analysis.

This operator intensive procedure was replaced by a local area network (LAN) in October 1998. The LAN provides a basis for the automatic exchange of data between personal computers in the Baku Central Computing Centre and is indicative of the future direction of computing development in the ADDY. The installation of this LAN should increase the usefulness of the Baku Central Computing Centre personal computers (PC's) which were previously operated in stand-alone mode.

Networking PC's will:

- remove the need for duplicate data entry,
- reduce the hazard of data-entry errors,
- improve data exchange between PC's on the LAN,
- reduce the labour content in the data processing activity,
- give ready access to the databases on the network,
- increase the availability of the PC's for data processing.

While the Baku / Moscow link is over a line leased from the Ministry of Communications, the other links are over ADDY private lines.

There is also a 1,200 bps link between the Baku Central Computing Centre and the Freight Unit in ADDY Headquarters.

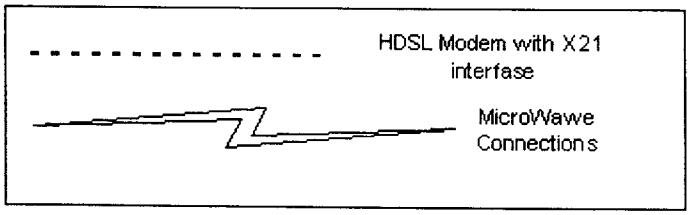
1.4.4.2 **Projected Data Communications**

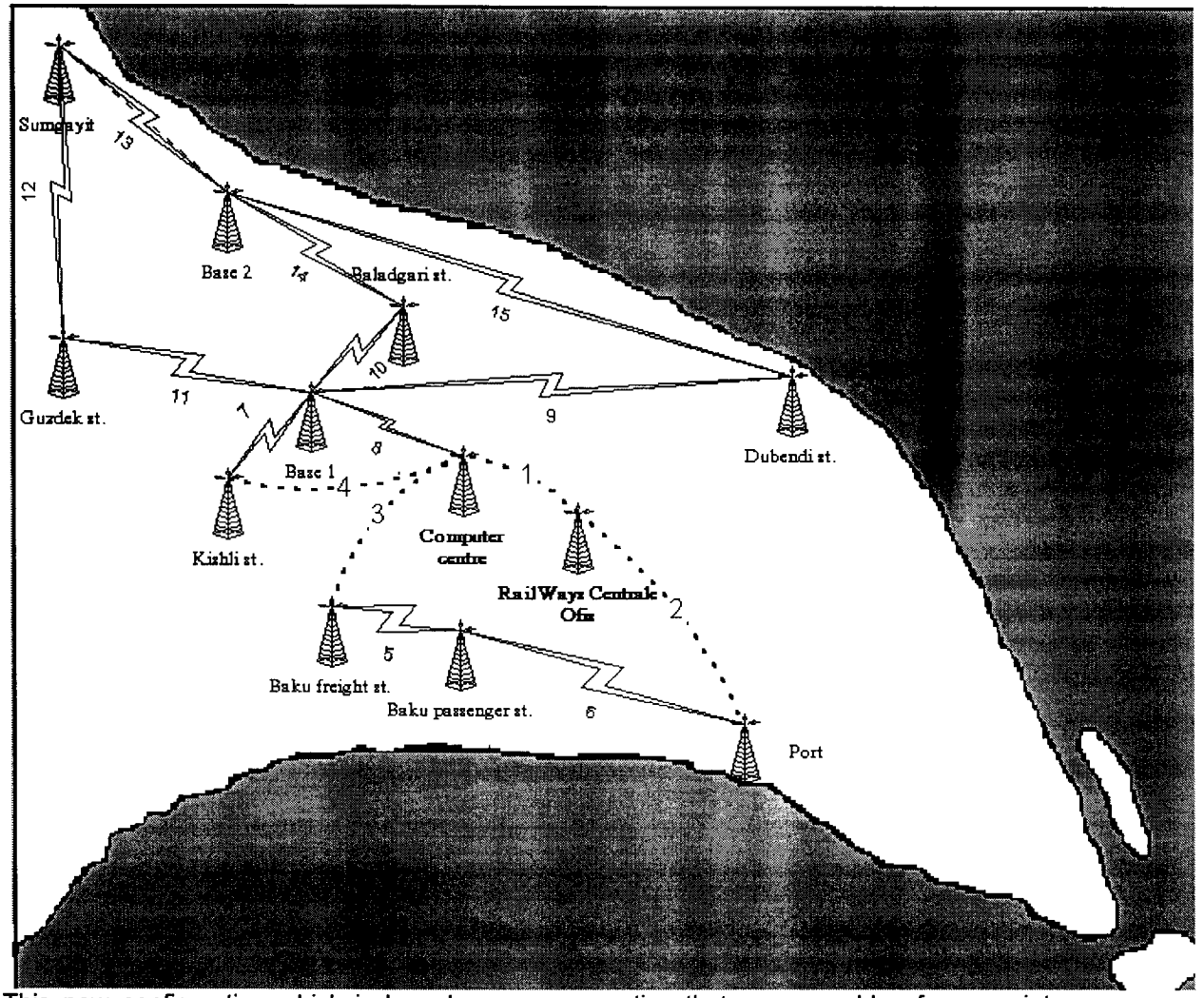
It is generally accepted that the proposed Caucasus Fibre-Optic Cable from the Black Sea to the Caspian will be a major contribution to meeting the data communications needs of the ADDY. There is a shortage of data on how it is proposed to link data communications to the TACIS Fibre-Optic Cable when it becomes available. That is the service to be provided by the fibre-optic cable service has yet to be announced. The need to implement a communications system to connect the major installations, including the administrative headquarters of the ADDY, in the Greater Baku area to the Fibre-Optic cable has been identified and preliminary planning of a micro-wave network has been undertaken.

A least cost design for the projected micro-wave network would be to base the micro-wave network design on a Star layout around a central Hub. This lesser cost design is vulnerable to locations being isolated by the failure of one
link. The failure of the central Hub of the network would result in a "worst case scenario" where all locations were isolated. The budgetary cost of this design was said to be in the range of US$130,000 to US$150,000.

The lack of resilience in the "STAR" design could be avoided by the implementation of "Ring Circuit" micro-wave network. The achievement of a "Ring Circuit" network usually requires the introduction of additional communications nodes. That is the additional micro-wave base stations which are introduced when there is not "line of sight" between two user base stations.

This alternative network design would through the introduction of two additional communications nodes and four additional micro-wave links give a higher degree of resilience than the lesser cost "Star" design. The work done in the preparation of the budgetary estimates would have to be supplemented by field trials to verify that a line of sight is available between each pair of base stations prior to a final decision. The ADDY Computer Centre has responded to this suggestion with a revised proposal for communications in Baku and the Absheron region based on a combination of radio and land line media. The proposed configuration is shown in the schematic included below.





This new configuration which is based on an assumption that copper cable of appropriate quality is available in the areas indicated has two points of potential critical failure.

A failure at the computer centre would cut off all locations to the North as would a failure at Base 1. It is understood that these cost estimates do not include any provision for technology designed to protect against the adverse impact of extremely impenetrable rainfall. It is projected that this revised configuration will cost approximately US$520,000 which raises a serious question regarding the validity of the projected cost of US$180,000 to US$200,000 given for the original proposal.

The number of locations served by the proposed micro-wave network will ultimately depend on the route and architecture of the TACIS Fibre-Optic Cable. Another suggestion was that data communications needs for the remainder of the ADDY outside the area of the Fibre-Optic Cable should be met by the installation of micro-wave networks. The observations regarding reliability and resilience made above would be equally applicable to this proposition. The micro-wave proposals, which came from the Central Computing Centre, were not supported by the Chief of Signalling and Communications in discussions with the consultant.

There was an inconsistency in the messages being received from the Signalling and Communications Department regarding the manner in which the services would be linked to the proposed Tacis Fibre-Optic link.

There was an emphasis on the provision of voice communications with data communications in a secondary position and no indication of the Fibre-Optic cable being used to support track-side signalling. Neither was there any evidence of a formal assessment of data volumes.

It is usual for organisations that are installing a modern PABX to adopt a "one phone per desk" strategy resulting in a significant reduction in the number of PABX lines and the number of telephone handsets. The very large numbers of lines per PABX mentioned during discussions would indicate that there is scope for such a rationalisation during the planning of new PABX telephone systems based on the TACIS Fibre-Optic Cable.

1.4.5 Central Computing Centre Staff

The personnel structure of the Central Computing Centre reflects its origins as a mainframe batch computing installation of the 1970's.

Despite the change over to personal computers, the Centre continues to provide the data collection, data validation and output distribution services which were a feature of computing back in the 1960's and early 1970's. This emphasis on support functions coupled with an inability to re-locate surplus personnel results in a staff of only 7 computer programmers in an establishment of 150 persons.

None of the personnel were described as systems analysts nor designers. The small number of computer professionals represents yet another limitation on the capacity of the ADDY to develop and implement systems. There is no existing programme for the retraining of suitable surplus personnel to meet the personnel needs of the future.

1.5 Computing Techniques

1.5.1 Data Coding

Limited computerisation in the ADDY has resulted in very little use of codes to represent locations, activities or events. Coding structures are the foundation of computerised systems. This is particularly so when the computerised systems are integrated management information systems. Integrated computerised systems are achieved through the exchange of data between systems by electronic means without any need for manual intervention.

The successful exchange of data depends on a coherent approach to coding. Integrated systems need integrated coding structures. A coding system must condense information, ensure uniformity of presentation, eliminate ambiguities, and facilitate sorting and filing.

The coding system must enable each item in the list to which it refers to be identified in a single, reliable and easy manner.

The code chosen then makes it possible to achieve the necessary one-to-one relationship between an item and the symbol representing it. It should also enable items in the list to be described.

A coding structure must therefore essentially meet the following requirements:

Permanence:	the code allocated must remain unchanged for as long as possible,
Simplicity:	the code must take account of the conditions under which it is to be used and the personnel using it,
Accuracy:	there must be no ambiguity in allocating a code to an item or in recognising an item from a code,

Conciseness: codes should use the minimum number of symbols, taking into account the requirements expressed by the users, and if at all possible have a constant length,

Enhancement: it must be possible to update the code in the event of the number of items in the list being increased,

Numeric: so that difficulties associated with the use of different scripts are avoided.

It is important that a coding structure should have sufficient provision for expansion so as to avoid the problems/cost of upgrading computer applications and/or having to undertake tasks such as the re-marking of railway rolling stock. The efficient operation of a coding structure depends on code allocation being vested in a single authority. Since the ready integration of systems depends on codes having a consistent meaning across an organisation, it is necessary that the development of coding structures should be addressed on an organisation wide basis.

Not alone should a code have a consistent meaning across an organisation but so also should an item have but one code across the organisation. Where a coding structure is used by two, or more, sections of an organisation there is a need for agreement between the parties as to which should be the code allocation authority or as to whether code allocation should be vested in a committee representative of the participating sections.

1.5.2 Information Quality

The introduction of a new management organisation with a competitive business focus will generate a demand for information to be available as required. The servicing of this demand will call for the availability of an appropriately organised database with online enquiry tools enabling the end user to access the database and formulate enquiries with a minimum of effort. It will be essential to ensure that there is consistency in information produced whether in scheduled reports or in response to ad-hoc enquiries.

The foundation of consistent information is good systems design and accurate data. If invalid data is accepted by a computer system, the information provided by the computer system will also be invalid. A failure to recognise such inaccuracies can result in disproportionate damage to an organisation because of the impact of decisions based on the erroneous information.

Evidence of such inaccuracies will result in a lack of confidence in information provided by the system It will lead to the development of manual checking processes with an associated waste of resources.

The wasteful consumption of resources can also arise where data is collected in parallel by two, or more, application systems. The information produced by such systems will inevitably be cross checked and apparent incompatibilities identified.

An example of parallel data streams relates to freight tonnage:
freight tonnage is entered into a computer system from Locomotive Drivers daily journals,
freight tonnage is input from freight revenue documents,
freight tonnage is input from reports of consignments loaded and unloaded at stations,
resulting in a cross-checking process in the Baku Central Computing Centre.

While some incompatibilities may be due to valid differences in presentation, others will arise from data-collection errors in one, or more, of the applications system.

- Data collection errors, during the document trail from an event to the time and place of data-entry, can arise in a number of ways including:
- original data recording errors,
- data transcription errors,

- data summarisation errors,
- data transmission by telephone errors,
- data entry errors due to inadequate validation at time of entry.

Having parallel data collection processes increases the opportunities for such errors with the associated implications.

The reduction / avoidance of these situations can best be achieved through:

- data being entered once at source, ideally by the person involved in the event,
- online data validated at time of entry,
- data, once entered, being available to all application systems,
- the exchange of processed data between application systems,
- the development of a corporate database available to all users / systems in accordance with a formal hierarchy of access needs.

These processes can be facilitated by having personal computers located in the work-place where the person doing the work will have the knowledge to correct errors, identified by the validation process, in real-time. The arrival of the personal computer with its graphic colour screen has provided the basis for a dramatic change in the data-entry process. The use of named boxes supported by item description selection from a drop-down menu has reduced the need for the entry of the codes on which computer systems rely so heavily and as a consequence reduce the opportunity for data-entry errors.

The drop down menus can be customised to reflect the frequency with which items in a list occur in a particular location thereby speeding up the item selection process and data-entry generally.

1.5.3 Database

1.5.3.1 **Computer Systems Integration**

The initial approach to computerisation was to develop systems in isolation.

It was soon realised that there was an opportunity / need to exchange data between systems. The exchange of data between systems brought advantages such as:

- the avoidance of duplicate data-entry, which in the early days of punch cards when each item of data had to pass through two keyboard processes of punching and verification prior to being loaded into a computer, was very costly,
- consistency in the data being used by associated systems,
- faster production of reports.

In time it was not unusual for many systems to be linked together in series to produce a final product such as management accounting reports. The diagram below is a simplified example of the relationship between a payroll, inventory control and job costing systems. It shows how the validation of the timesheet, job card and materials requisitions were carried out in isolation from each other thereby creating opportunities for incompatibilities as the systems converge to produce the job costs.

Incompatibilities at each point of convergence generate additional human involvement, lengthen the duration of the processing cycle and delay the production of management reports. The integration of such systems also calls for the synchronisation of the running of the various systems so that files have the appropriate status when used. Synchronisation calls for the intervention of a human scheduler. As the number of inter system relationships increases, the opportunity for incompatibilities and the complexity of the scheduling task increase exponentially leading to failures and disruption.

1.5.3.2 Database Management

Database management systems were developed in response to a growing demand for the integration of computer systems.

Relational databases such as Oracle have become the accepted database technology. Relational database design is built around having a series of Tables each dealing with a separate facet of the real world which the database portrays. Forms, which are associated with Tables as appropriate, are the means through which data is input and processing is initiated.

Data is output from a database by means of Reports and Queries each of which are associated with Tables as appropriate. The Reports facility is employed when producing reports printed on paper in accordance with a schedule. The Query facility is employed to make on-line enquiries where the response may be displayed on a computer screen or printed as appropriate. The guiding principle in database design is that each item data is held only once and is made available to users in accordance with a defined hierarchy of access rights.

This ensures that data is entered once thereby avoiding the increased exposure to errors in multiple entry scenarios and the associated problems of reconciliation.

A database management system:

- controls access to data,
- ensures that synchronisation issues do not arise,
- provides data recovery procedures in the event of system failure.

1.5.4 Management of MIS Development

There is a need to ensure that investment in MIS supports the new management organisation in the achievement of the business objectives of the ADDY.

The corporate approach to MIS development needs to ensure that:

- business focused applications systems which yield improved services to the customers in a cost effective manner are implemented,
- the business unit management have a sense of system ownership with an associated sense of responsibility for the successful implementation and operation of new systems,
- the development of computerised systems is undertaken in the coherent and complementary manner which is necessary to the achievement of integrated management information systems,
- the steps being taken to focus computer expenditure are reinforced and that computer related investment decisions are made on the basis of the contribution to the improvement of the overall profitability of the ADDY rather than on the accident of the function / unit / enterprise which may have a current cash surplus.

1.6 Recommendations

1.6.1 Accounting

It is recommended that the accounting needs of the restructured ADDY should, if at all possible, be met by the acquisition of an established accounting package.

The selected accounting package should:

- be an industry recognised package,
- be hardware independent,
- have vendor/agent support in Baku,
- support integrated financial and management accounting,
- support multiple currency accounting,
- support the processing of non-financial data,
- support multiple users,
- provide interfaces for the exchange of data with other computer systems,
- accept transaction input over a network,
- accept journal data by file transfer over a network,
- have a user friendly report writer,
- support data exchange with desktop tools such as spreadsheets and word processors,
- include a user access control process.

The multiple enterprise structure of the ADDY will have significant implications for the cost of software package solutions. Software package providers expect to conclude individual licence agreements with each legal entity.

It is not possible on the basis of available information to make an estimate of the cost of the software required for the implementation of an integrated accounting package system. The multiplicity of legal entities is also an issue when placing contracts for the custom development of computer software. It is necessary when placing orders for computer software development to ensure that full title to all the rights relating to the use, modification and resale of the software pass to the ADDY.

1.6.2 Human Resources

It is recommended that a strategy should be developed for the early implementation of the payroll system in all the ADDY enterprises and functions based on local personal computers in anticipation of the availability of wide area data communications.

Steps should be taken to secure a Human Resources software package. A suitable system would:

- have a comprehensive employee master record,
- support data collection by computer file over a network,
- support data collection by scanner,
- support employee history,
- maintain records of employee attendance, pay rates etc.,
- run in client/server mode on a Windows computer platform,
- support control of user access in accordance with a hierarchy of need.

1.6.3 Freight Management

The ongoing upgrading of the freight operating systems should be suspended and be replaced by a project with the objective integrating the functionality of these systems around a common database or, if necessary, databases. Consideration should be given to the inclusion of the locomotive performance reporting activity, which includes details of tonnage and tonne Km hauled, in the project.

The adoption of database techniques would:

- reduce the volume of data-entry,
- avoid the cross-checking process that is a feature of the current situation,
- improve the quality of data held on file,
- increase the usability of the data,
- lead to better management information.

This investment in the freight operating systems should be paralleled by the development of a system that should implement all truly commercial functions:

- customers files,
- information to clients,
- real time computation of costs,
- pricing and invoicing,
- delivering statistics on sources of revenue.

It is important to implement this commercial system first in a single "information centre" in Baku, it could be decentralised to a number of key locations as data transmission facilities and resources permitted. It is recommended that these developments should be based on the Oracle Database Management System with which some of the personnel in the Central Computing Centre are already familiar. Central Computer Centre personnel should be given formal training in a recognised Oracle Training School in the design, development and implementation of relational databases using the Oracle system.

1.6.4 Passenger Reservations and Ticketing

It is recommended that:

- responsibility for the security, maintenance and extension of the Passenger System software should be passed to the Central Computing Centre immediately,
- interfaces between the computerised passenger ticketing system and other computerised systems such as passenger revenue accounting should be developed as a matter of priority; these interfaces could be based on a diskette transfer pending the establishment of data communications between Baku Passenger station and the Baku Central Computing Centre,
- the need for 26 computerised ticket booths in Baku should be examined; the volume of sales on the sample day seen during the visit does not warrant such a large number of booths – 50% would probably be a generous allocation,
- stations outside Baku should be selected for computerisation on the basis of the volume of long-distance passenger traffic. In the absence of access to passenger booking statistics, the consultant would expect that a very high percentage of passengers originate at a small number of stations.
- ticket booth computer configurations surplus to the traffic needs of Baku station should be relocated to those stations as data communications facilities become available.

It is recommended that the design of the Passenger System should be reviewed prior to any extension of the system. The review should include:

- an assessment of the database management facilities versus the facilities that would be available in a proprietary database management system,
- an assessment of the throughput capability of the current file server,
- an examination of the division of application activity between the client (ticket office) computers and the file server,
- an assessment of the throughput capability of the Ethernet in Baku Passenger Station,
- an assessment of file security copying and storage procedures,
- an assessment of failure recovery procedures by type of failure, for example what is the ticket sales procedure in the event of a computer system failure?
- an assessment of access control procedures.

1.6.5 Train Despatching

It is recommended that consideration should be given to the development of a Train Circulation Monitoring system as an automated support to the Train Despatching function.

The main objectives of the Train Circulation Monitoring system would be to provide timely and reliable information across the company, concerning the train circulation services to be offered for freight and passenger operators.

The application should provide information covering circulation requirements, circulation timetables and planning, circulation statistics, analysis and forecasts. The system would also collect data on the movement trains in support of the train despatch function and as a basis of information for both management and customers. This system should be designed in accordance with database management principles within the Freight Management database structure.

1.6.6 Materials Management

The scale of the investment in materials stock holdings is a critical item in the financial viability of an organisation. Good financial management requires that stock holdings are kept to a minimum through the integration of the records of all warehouses and the adoption of "just in time" (JIT) techniques.

It is recommended that:

- the materials control function should be computerised by the installation of computing facilities in all locations where there are significant stock-holdings,
- the computers in the various warehouse should be linked to a computer in the Materials Manager's department,
- the ADDY should seek to obtain a software package for this materials management function,
- the selected package should:
- work in client / server mode on a Windows computer platform,
- fulfil all the materials management tasks such as order, receipt, issue and inter-store transfers,
- accept both volume and value data for these transactions,
- maintain records of both the volume and value of stock holdings per material item,
- have the capacity to calculate issue price per item on the basis of the amount of the suppliers invoice details,
- generate journal entries for transfer electronically to accounting and costing systems,
- include access control in accordance with a hierarchy of need.

The focus of the new management structure will, among other items, be on the optimum use of available cash resources. The optimisation of the level of cash tied up in stock-holdings requires that the activities of all stock warehouses are co-ordinated so as to ensure that materials in surplus in one warehouse are not being ordered for another. This objective is best achieved through the development of an integrated stock control system for those warehouses.

The warehouse computers would be linked by communications to achieve the level of integration necessary to achieve the desired integration. The implementation of this project would require that a catalogue of material codes be developed for all materials held in all ADDY materials warehouses. It would be essential the each stock item had the same material code in all materials warehouses.

Having consistent materials codes across all materials warehouse computer systems would support the cross checking necessary to ensure avoidance of the ordering of unnecessary materials.

Consistent materials codes across all warehouses would facilitate the extraction of data on the various aspects of the materials management function such as:

- annual expenditure on particular materials,

- stock-holdings of particular materials,
- incidence of slow moving materials,
- incidence of non-moving materials,
- consumption of materials in a given location compared with some measure of activity in that location.

1.6.7 Baku Wagon Works

It is recommended that, if the EBRD proposals are implemented, the production control, costing, accounting and management activity in the Baku Wagon Works should be computerised. A job costing process based on the existing manual processes would be document and labour intensive. It would be clumsy in operation and vulnerable to error. An efficient job costing system will be of growing importance as the Baku Wagon Works sought to increase activity through an expansion of work for companies and organisations outside the ADDY.

It is recommended that the ADDY should endeavour to obtain a proven software package rather than seek to develop a custom written system. The Baku Wagon Works computer system should be designed to work in client / server mode on a Windows computer platform. Accounting to Profit & Loss and Balance Sheet should employ the accounting software system adopted as the standard for the ADDY.

The consultant has not, as yet, identified appropriate software in the Baku software marketplace. In the event of the EBRD project not proceeding, it would be still appropriate that the management processes of the Works should be computerised when the capital was available.

The management information needs of the present type of production could be met by a less elaborate approach consisting of the existing ADDY computer payroll and a less elaborate accounting system would probably involve an investment of between US$20,000 and US$30,000 on a stand-alone basis.

1.6.8 Baku Central Computing Centre

The reorganisation of the management structure of the Azerbaijan Railways should be accompanied by a parallel review of the role of the Baku Central Computing Centre. Activity in the centre should be analysed and associated with the new functional structure. The process of transferring data collection out to personal computers in the originating functions / enterprise / locations should be accelerated.

There should be a parallel transfer of local data processing out to these personal computers. Functional management should be given control over and responsibility for the running of their computing facilities - including cost control.

These activities should, in the first instance, be distributed to the head offices of the "enterprises" and the functions. The dispersal of the activities down to the "ground level" where the events take place would depend on the availability of communications facilities and finances. The dispersal of responsibility for the day to day operation of data collection and entry into computer systems would:

- place the responsibility for data collection on the enterprise / functional management,
- give enterprise / functional management authority over the consumption of resources in data collection,
- give enterprise / functional management an incentive to ensure that data collection was done in the most efficient and cost effective way,
- result in the personnel establishment of the Baku Central Computing Centre consisting almost entirely of specialist technical and professional personnel,

- enable the Baku Central Computing Centre management to concentrate on its primary role of system delivery and support.

If the Baku Central Computing Centre is to fulfil its role and make a necessary contribution to the modernisation of the Azerbaijan Railways management information systems, it will have to undertake a number of tasks most notably:

- equip itself as a centre of technical excellence,
- organise itself to work in close co-operation with its customers – the managers of the various functional units / enterprises,
- maintain an inventory of computing resources, both hardware and software, throughout the ADDY – this inventory should be synchronised with asset management in finance and accounting.

The staff of the central computing centre of the future should include personnel with extensive skills and experience in the following:

- computer hardware selection,
- computer software selection,
- telecommunications equipment selection,
- computer systems design,
- telecommunications network design,
- telecommunications network management,
- database design,
- software package procurement,
- software programming,
- system acceptance testing,
- system specification development in close co-operation with the end-user,
- contract specifications,
- tender evaluation criteria,
- contract negotiations,
- development of standards for:
- system operating instructions,
- data security,
- site security,
- failure recovery,
- third party software,
- computer hardware,
- data communications hardware.

The achievement of this level of competence should be brought about through a combination of recruitment of specialists and a formal programme of personnel development.

The personnel development programme should be based on attendance at a combination of internal and external courses. The personnel development programme for the Baku Central Computing Centre should be an integral part of an overall management development plan within the context of the introduction of the new organisation structure and management methods.

It is recommended that the computer personnel and equipment which will form the nucleus of the Computer Centre of the future should be relocated to the Railway Headquarters – the current building is not compatible with the efficient organisation of a modern technology centre. The central computing centre of the future should regard itself as a service enterprise with customers. A service enterprise that, while setting standards and ensuring that those standards are observed, recognises that its purpose is to respond, in accordance with best information technology practice, to the identified needs of the customers in the pursuit of their business objectives.

The relationship between the central computing centre and its customers will be best advanced within a formal context combining opportunities with responsibilities.

1.6.9 Coding Structures

It is recommended that the establishment of a Coding Structure Project Team be given top priority. This project team would consist of a nucleus of foreign experts supported by ADDY personnel representative of the various enterprises and the various disciplines in the ADDY. The development of a coding structure is a prerequisite to the development of integrated management information systems for the ADDY.

The coding structure design will have to encompass all activities in the ADDY so that coding conflicts may be avoided as individual computer applications are developed and integrated in the future. The Project Team will have to undertake an in-depth examination of all activities in each enterprise.

The scale of this task is demonstrated by the fact that there are approximately 400 enterprises in the ADDY and that a number of locations in each enterprise will have to be examined in-depth. The final product of the Coding Structure Project will be a series of Coding Manuals for the ADDY that list Cost-Centre and Nominal Account codes in:

numerical order with short and expanded narrative descriptions,
short description alphabetical order with numerical code and expanded narrative description.
The use of these Coding Manuals in the development of computer systems would ensure that systems developed individually were compatible and available for integration as management information systems developed.

While the duration of this task would be dependent on the scale of the resources employed and the co-operation of the various functions / enterprises, it is anticipated that it would be prudent to plan on an at least two calendar year programme.

1.6.10 Information Quality

It is recommended that:
prime data should, as far as is feasible, be entered by the person undertaking the activity to that the data refers,
the objective should be to have data-entry always be done at the location where the activity occurs,
data should be entered once,
data should be subjected to on-line validation at time of entry,
data should be stored in corporate databases,
data should be available to systems and users in accordance with a hierarchy of access needs,
the ADDY MIS development plan should include provision for the progressive distribution of the data collection function to PC's sited in the locations where the events occur,
data collection programs should be developed around the facilities of the personal computer's graphic user interface using form filling techniques supported by drop down menu options to reduce the need for code selection and entry.

1.6.11 Database

It is recommended that, if at all possible, a database management system such as Oracle should be adopted as the ADDY file management standard. System design personnel should be trained in relational database design concepts so that they may be equipped to ensure that systems design, prior to the acquisition of a database management system, reflects relational database principles.

1.6.12 Management of MIS Development

It is recommended that an MIS Steering Committee be established to:
- determine MIS policy,
- assess proposals,
- set implementation priorities,
- control MIS costs.

This group, which would be led by the Director General of the ADDY, or a Deputy nominated by him, would be guided by its assessment of how proposed projects would contribute to the achievement ADDY business objectives in a competitive environment.

Project proposals would:

- originate in the business units / functions / enterprises,
- be assessed for technical feasibility by the Central Computing Centre, and
- be priced in conjunction with an accounting nominee of the Deputy for Economics.

Project proposals would be presented to the MIS Steering Committee by the proposing Deputy supported by the Head of Computing.

Approved projects would be passed to a business unit Working Party which would be responsible for the development and implementation of the project:

- to specification,
- as scheduled, and
- within the approved cost budget.

Business unit Working Parties would consist of representatives of the business unit and the Central Computing Centre. These Working Parties would be led by a nominee of the proposing Deputy.

The Central Computing Centre or an external contractor would undertake work on a sub-project basis for the Business Unit Working Party. The leader of each Working Party together with the lead Central Computing representative on the Working Party would report to the MIS Steering Committee on progress against specification, cost and schedule at pre-determined intervals such as once every four weeks.

It would be the responsibility of the MIS Steering Committee to initiate project performance audits following a period of live running. The adoption of this approach to MIS development should ensure that:

- business focused cost effective applications systems that yield improved services to the customers in a cost effective manner are implemented,
- the business unit management had a sense of system ownership with an associated sense of responsibility for the successful implementation and operation of new systems,
- the development of computerised systems is undertaken in the coherent and complementary manner which is necessary to the achievement of integrated management information systems,
- the steps being taken to focus computer expenditure are reinforced and that computer related investment decisions are made on the basis of contribution to the improvement of the overall profitability of the KZR rather than on the accident of the function / unit / enterprise that appears to have a current cash surplus.

1.6.13 Data Communications

It is recommended that:

- a multi-disciplinary Working Party be established to:

clarify the scope and boundaries of the proposed TACIS Fibre-optic cable,
develop a comprehensive communications strategy covering voice, data, video and signalling,
progress the proposal for a micro-wave network serving the major locations in the Greater Baku area,
rationalise the number of telephones as new PABX systems are installed,
the computer development strategy should be based on the implementation of local area networks (LAN's) linked by wide area network (WAN) bridges as improved long-distance communications become available,
the design of any micro-wave communications facility should incorporate necessary resilience through the implementation of ring-circuit techniques that would give alternative routing to all locations including the TACIS Fibre-Optic Cable,
information on the pattern of rainfall in Azerbaijan should be reviewed in conjunction with information on the vulnerability of micro-wave communications to heavy rainfall so that the reliability of proposed micro-wave implementations in the Azerbaijan environment may be assessed prior to a decision to proceed with a project.

1.6.14 Training

It is recommended that the design and objectives of the planned management information systems should be an integral part of training programmes developed to introduce middle and lower management to the detailed implications of the new organisational structure.

Management and personnel should be educated in the operation and use of the planned MIS systems as these are being developed and implemented. Technical personnel should be trained in the skills required to design, develop and install these new systems, both computer and communications. Business unit personnel will have to be given training in specification of needs, the testing of systems, the installation of systems and the ongoing management of systems.

User personnel will have to be trained in the tasks involved in the daily running of the systems. These proposals should be incorporated into the overall training programme in support of the introduction and operation of the new business focused management structure.

1.7 Near-term Strategy

The complexity of the ADDY structure, the scale of the education task, the scale of the training task, the evidently large scale of the investment involved all point to a need for a phased implementation of management information systems in the ADDY. In addition, it is inevitable that there will be a waiting period prior to the availability long-distance data communications based on the TACIS Fibre-Optic Cable.

The duration of this period will consist of components such as:

- project approval and funding,
- project design,
- request for tenders,
- review of tenders and supplier selection,
- lead time for delivery and installation of equipment,
- system testing and acceptance,
- service connection, for example time taken to interface LAN's to the TACIS Fibre-Optic Cable between Black Sea and the Caspian.

It is necessary to plan for this situation by identifying tasks which:

should be done prior to the availability of the trunk data communications facilities,
tasks which may be done during the waiting period. A soundly based comprehensive coding structure, which is a prerequisite for the commencement of an orderly implementation of an integrated management information system (MIS), is an example of a task which could be addressed during this waiting period. The completion of the coding structure would provide the basis for the development of an overview of the ADDY management information systems identifying the various component modules and defining the data to be exchanged between those modules.

The management information systems overview should be driven by the information needs of the new management structure and style reflecting the manner in which the ADDY plans on adapting to the emerging business environment within which it will have to develop.

The modular composition of the Management Information Systems design would be both functional and geographic giving an opportunity for the adoption of a strategy adapted to the availability of data communications facilities.

One possible strategy would be to first implement the new management information systems in the top layers of the new management structure and to extend the system down through the organisation progressively.

This strategy would have the twin benefits of:

- affording top management an opportunity to adapt to and adopt the new processes before embarking on "selling" new approaches to middle and lower management,
- allowing the selection of geographical modules on the basis of benefit to the ADDY and the availability of data communications facilities.

The project selection process should take into account factors such as the:

- benefit accruing to the ADDY from a possible development,
- availability of computers for the project,
- possibility of installing LAN's where appropriate,
- availability of trunk data communications,
- acceptability of establishing inter-LAN communications over the INTERNET,
- acceptability of data transfers by diskette during the waiting period.

The systems implementation process should be based on a combination of package software for generic situations and custom written software for railway specific needs. The custom written software should be developed using a combination of in-house expertise and software contractors. The employment of contractors would have a number of benefits including:

- a faster development programme,
- avoidance of the hazard of having too many personnel when the initial peak development demand had passed.

It is important to be conscious of the load that computer systems implementation places on the business user within an organisation. Business users need to be educated in the opportunities and requirements of computerisation so that they may be equipped to specify their needs and business processes to computer specialists, key user personnel have to be trained so that they test and accept new systems, user personnel have also got to be trained in the operation of computer systems.

The scale of this work load means that there is a limit to the volume of computerisation which can be absorbed by a business unit either operational or administrative. Accordingly, computerisation development programmes depend not alone on the availability of resources

such as finance and data communications infrastructure but also on the capacity of an organisation to service such developments while continuing to perform its day to day tasks.

Restructuring of Azerbaijan Railways

Volume I
Environmental Management Plan

Restructuring of Azerbaijan Railways

Volume I
Environmental Management Plan

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EXECUTIVE SUMMARY

This report constitutes Volume I of a two-volume report on the environmental management of Azerbaijan Railways. Its sets out a proposed Environmental Management Plan for the railway. Volume II provides a more detailed account of the current environmental legislation in Azerbaijan relevant to the railway.

The European Bank for Reconstruction and Development (EBRD) is giving consideration to providing a loan of US$30 million to Azerbaijan Railways (Azerbaijan Dovlet Demir Yolu - ADDY). The project is designed to enhance the physical and economic viability of the strategically important trans-Caucasian transport corridor which links the central Asian republics of the former Soviet Union with the Black Sea ports and western Europe.

The loan to be provided to ADDY provides for a capital investment programme in track renewal, the purchase of a modern ballast tamper, rehabilitation of the Balajari Wagon Washing Plant , modernisation of the Baku Wagon Workshop and the installation of new fibre optic communication systems. The EU Tacis TRACECA Programme (Transport Corridor Europe Caucasus Asia) is working closely with the EBRD and providing US$6.7 million for the fibre optic communications and technical co-operation. The technical co-operation programme includes the preparation of a 5-year business plan, restructuring proposals for the railway and an Environmental Management Plan.

This report sets out the current environmental status of the railway and identifies several priorities that will need to be addressed these include:

- the potential for major oil spills resulting from damaged track or poor rolling stock.
- pollution along the track at train stopping points and river crossings;
- widespread pollution and contamination issues at stations, depots and other facilities; and
- waste management.

The proposed investment programme will largely generate environmental benefits but by far the largest environmental challenges that will face the railway will arise through the restructuring of ADDY and its proposed division into separate business and service units. The railway is faced with an enormous stockpile of redundant equipment, wagons and locomotives, and by huge problems of land contamination and emissions, non-compliant with current legislation and best practice.

This report sets out a framework EMP for the railway and proposes:

- the creation of the post of Corporate Environmental and Health and Safety Manager reporting directly to the Director General of the railway;
- the creation of the post of an Assistant Corporate Environmental and Health and Safety Manager for each of the proposed operating units of the restructured ADDY;
- the establishment of a corporate environmental policy;
- a complete and thorough audit of all ADDY facilities and operations;
- a legislative review and the establishment of a register or database of environmental legislation;
- the establishment of a priority action list for those areas where ADDY is non-compliant with current legislation;
- separate EMP's for specific facilities;
- the preparation of corporate directives on *inter alia* waste management, energy efficiency and recycling; and
- an early and on-going training and 'train-the-trainers' programme for ADDY.

1 MISSION AND OBJECTIVES

1.1 Introduction

The European Bank for Reconstruction and Development (EBRD) is giving consideration to providing a loan of US$30 million to Azerbaijan Railways (ADDY). The project is designed to enhance the physical and economic viability of the strategically important trans-Caucasian transport corridor which links the central Asian republics of the former Soviet Union with the Black Sea ports and western Europe.

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This report constitutes the Environmental Management Plan for the restructured railway.

The EBRD is directed by its founding agreement to 'promote in the full range of its activities environmentally sound and sustainable development'. In order to implement this directive the Bank ensure that all of its investment and technical co-operation activities undergo environmental appraisal as part of the overall financial, economic, legal and technical due diligence process.

The Bank categorise projects is three ways:

1. **A Level** projects are 'greenfield' or major extension projects. Projects listed in this category will normally require a full Environmental Impact Analysis (EIA) as part of the loan procedure.

2. **B Level** projects are those greenfield or major extension projects not included in the EBRD listing for category A. By virtue of their size and nature they will have a lesser impact on the environment and will require an Environmental Analysis (EA). The EA is similar in scope, but more limited than, a full EIA.

3. **C Level** projects are those considered not to have any potential impact on the environment and do not require either an EIA or EA.

Regardless of the above categorisation if, in the opinion of the Bank, a project requires an environmental audit it is screened in category 1. If no audit is required, it is screened in category 0.

This project has been screened as Category B/0 and the Bank require the preparation of an Environmental Management Plan.

1.2 Environmental Management Planning

1.2.1 Environmental Management and Monitoring Plans

The integration of environmental issues with all aspects of a business operation has become a well accepted component of modern commercial practice. Companies in all sectors now recognise both the public relations and financial sense of ensuring that environment is a core business function.

Corporate Environmental Managers often form part of the senior management team of a business. They may well have overall responsibilities that extend through issues such as stack emissions, effluent discharge and waste management all the way to procurement and recycling in the office environment and the training of staff. In larger, more complex operations their functions will be delegated through the management structure to individual plant managers and administrators depending on the nature of the business. Very often, operational health and safety will be integrated into the environmental management function.

A key tool in the environmental management system of a business will be an Environmental Management Plan (EMP). The EMP will set out the environmental position of the business, review this against relevant national and international standards and practices, and examine those issues necessary to either achieve compliance and/or meet future expected regulatory requirements. In addition the EMP may address housekeeping issues which will impact on the overall profitability of the business such as waste management, recycling and procurement.

It is extremely important that the EMP is seen as working document: one that regularly sets targets, monitors progress and re-evaluates performance. The EMP should be integrated as part of the overall planning strategy of an operation and should track the development of the corporate business plan.

1.2.2 Environmental Management Plan for ADDY

An EMP plan for ADDY will not only be a requirement of the EBRD loan but will make good business sense for the restructured railway and form part of the 5-year business plan.

Current responsibility for environmental matters within ADDY rests with the Head of Technical Services. Although ADDY recognise the need for environmentally sustainable procedures and operations no EMP for the railway has been prepared.

The objective of this report has been to prepare a draft EMP plan for ADDY which will provide a framework for the environmental management of the railway and a priority action plan.

The report will:

- set out the current environmental problems on the railway which are based on a series of interviews with key staff, site visits and background information;
- review the present environmental standards and guidance in Azerbaijan which ADDY will need to meet;
- describe the projected impacts of both the capital investment programme to be funded by EBRD and the restructuring proposals for the railway;
- propose an Environmental Management Plan for ADDY together with priority actions; and
- set out roles and responsibilities and training needs within a new ADDY structure.

2 PROJECT DESCRIPTION

2.1 Current Operations

2.1.1 Operations, Infrastructure, Rolling Stock, Traffic

The Azerbaijan Railway system is a link of key strategic importance in the Caucasus. It connects the central Asian republics of Turkmenistan, Uzbekistan, Tadjikistan, Kyrghyzstan and Kazakhstan via the Caspian Sea and Tbilisi in Georgia to the Black Sea ports and western Europe. The trans-Caucasian section of the rail link consists of 488km of electrified double track connecting Balajari (near Baku) to the Georgian border at Beyuk-Kasik.

Azerbaijan Railways has a route length of 2125km of which approximately 815km are double track and 1310km are single track. The main section consists of the trans-Caucasian link to the Georgia.

The railway is laid to Russian standard gauge with a mix of concrete and wooden sleepers which support 65kg heavy section flat bottomed rail suitable for a maximum loading of 25 tonnes. The main lines are electrified at 3000v DC. The line and related structures are in very poor condition in many parts, forcing speed restrictions on several sections.

ADDY operates a fleet of over 500 locomotives of which approximately half are diesel and half electric. In addition a small number of electric multiple units (EMU's) are used for passenger services. The railway has some 24,700 wagons of which nearly 9000 are not available for use and have 844 loco-hauled passenger carriageways of which only 284 are currently used because of considerably reduced demand.

Traffic on the railway collapsed with the break-up of the Soviet Union and general civil unrest in the Caucasus. Freight traffic in 1990 was 90 million tonnes and declined to 9 million tonnes in 1995, similarly passenger traffic fell from 15 million (of which 11 million were suburban) in 1995 to 4.5 million in 1996 principally due to a sharp increase in fares. Since 1995 freight traffic has begun to recover based primarily on oil from Kazakhstan via the Caspian Sea.

Freight is the dominant source of traffic for ADDY accounting for greater than half of the total tonnage carried. Of the total freight traffic of 8.09million tonnes in 1997 over half was transit oil, the main growth coming from the Tengiz crude oil field operated by Chevron in Kazakhstan. Other oil products come from SOCAR (the State Oil Company of Azerbaijan) and from Turkmenistan. Most oil traffic is westward through Azerbaijan and, although a number of pipelines are currently being planned, oil traffic will dominate the freight rail market for the foreseeable future with substantial reserves in Azerbaijan, Kazakhstan and Turkmenistan yet to be developed.

2.1.2 Organisational Structure

Responsibility for environmental issues on the railway currently rests with Mr Agakerim Najafov, Head of Technical Services. He has two further specialists working for him the principal one of whom is Akif Agajanly the Senior Inspector for Environmental Matters.

The Head of Technical Services reports to Mr Musa S Panakhov, Deputy Chief of Railways.

There is no Environmental Management Plan in place for the railway and the work of the Division is principally to:

- receive, co-ordinate and act upon all environmental data related to railway operations that is issued by the Azerbaijan State Committee for Ecology; and
- analyse discharges and emissions to air from the various railway facilities and to prepare monthly reports for the State Committee on Ecology

The Division appear to have no dedicated laboratories or mobile laboratories although individual facilities do (for example the Balajari Wash Plant) and there is no emergency response team to deal with major environmental incidents.

2.2 Investment Components

The investment financed by the EBRD and the EU-Tacis programme can be broadly grouped into two elements:

- capital investment programme;
- technical assistance and restructuring.

The programmes are described in more detail below and the potential environmental impacts outlined in section 6.

2.2.1 Capital Investment Programme

This element of the programme includes the following components:

- track renewal over 50km of life-expired sections of the track between Balajari and Alyat. The programme will involve complete track replacement, including supply and installation of new ballast and the re-profiling of track formation to eliminate problems with track drainage;
- purchase of a modern ballast tamper;
- design and partial reconstruction of the Baku Wagon Repair Works;
- Rehabilitation and partial reconstruction of the Balajari Wagon Washing Plant including chemical separators for oil/water discharges and rehabilitation of the external cleaning plant; and
- the extension of the fibre optic communications line.

2.2.2 Technical Assistance and Restructuring

The principal components of this portion of the programme are:

- the separation of policy and operating responsibilities in the railway sector with ADDY being established as a government owned joint stock company;
- the need for ADDY to be managed according to commercial principles and the division of the freight and passenger businesses into separate profit centres;
- the drafting of a 5-year Business Plan.

3 LEGISLATIVE FRAMEWORK

This section provides a brief overview of the environmental administrative structures and requirements for Azerbaijan which relate to the operations of ADDY. Volume II of this report contains further details on all aspects of the requirements for environmental protection in Azerbaijan.

3.1 Environmental Administration and Agencies

The main body implementing state policy in the field of environmental protection is the State Committee for Environmental Protection, which subordinates directly to the president of the Azerbaijan Republic. The State Committee has a head office in Baku, two specialised departments, 29 territorial municipal, inter-district and district ecology committees.

The State Environmental Committee supervise the development of all standards and requirements concerning protection of the environment, and carry out state control over the status and utilisation of natural resources.

The national state monitoring of the environment is implemented by the State Hydrometeorology Committee and State Committee for Environmental Protection. Local monitoring is entrusted to companies utilising or having an impact on natural resources. They are obliged to include this provision in their documentation.

The responsibilities of the State Committee for Environmental Protection, in accordance with the existing legislation, include:

- development and implementation of the state environmental policy;
- development of recommendations concerning measures to protect nature;
- provision of state environmental expertise for new and existing projects and developments;
- suspension or closing down of enterprises which fail to meet the requirements of environmental legislation;
- inspection of operating enterprises;
- issuing of permits for the allowed discharge of pollutants; and
- suspension of financing any construction in case of violation of environmental laws.

The local (district and municipal) ecology committees subordinate directly to the State Committee for Ecology and perform the role of state control body, controlling the territory within their jurisdiction.

3.2 Permitting Authorities

The procedure for permitting industrial installations, including railways, is based on the law "On Environmental Protection", which includes the following aspects:

- maximum allowable (or permissible) concentrations of toxic pollutants (MAC or MPC) - these constitute the basis for developing standards of permissible environmental loading (MAC, known as "PDK" in Russian language, is normally calculated in mg/m^3);
- maximum allowable level of noise, vibration, magnetic fields, and other harmful agents;
- maximum allowable level of radiation;

- maximum allowable waste output per specific time limit and per specific agent (known as "PDV/PDS" in Russian) - set according to the specific function and conditions of the site;
- maximum allowable use of pesticides in agriculture;
- standards for environmental loading;
- maximum allowable standards for toxic substance residues in food products;
- the obligation to respect protected zones around any industrial or other type of site; and
- the requirement for final products to meet environmental standards.

PDK standards are determined for the following:

- specific air pollutants;
- specific surface water pollutants; and
- specific soil pollutants.

PDV/PDS norms are calculated for each industrial site on a time and pollutant basis as a function of the local conditions of site operations.

The "Temporary Allowed Waste Output" (known in Russian as VCV) refers to the limits imposed by the permitting authorities for industrial sites which cannot meet the PDV/PDS norms without changing its main production technology.

All permissible standards for industrial environmental impacts are determined by state-empowered environmental protection agencies, state ecological examination committees and the state agencies for sanitary and epidemiological control. The Department of Sanitary and Epidemiological Control now work under the authority of the Ministry of Health.

These agencies are known as "SAS" and have a reputation for fierce resistance to whatever they consider as improperly prepared or poorly completed work in the field of industrial environmental impact assessments.

All industrial projects must be co-ordinated with both the State Committee for Ecology and with the Sanitary and Epidemiological Control officials at the local level in cases where the project is of local importance. If the project is likely to effect several regions it should be co-ordinated at both the state and local levels. Based on the predetermined standards, industrial sites are assigned allowances for waste output in all forms, including gaseous emissions, waste water/effluent discharges, and industrial, urban, or other solid waste.

Whilst there is a clearly defined legislative and permitting process in Azerbaijan there is, in practice, little synergy between the railway and State Committee for Ecology resulting in few railway facilities, if any, achieving compliance with government standards. However, it should be noted that emission and discharge limits in Azerbaijan can be as much as one order of magnitude more restrictive than most other countries. As a result, in certain cases, concentrations may not even be measurable with current technologies and are practically never enforced.

4 CURRENT ENVIRONMENTAL PROBLEMS

Discussions took place during the project with a number of individuals both in ADDY and the State Committee on Ecology and Natural Resources regarding the current environmental problems of the railway and how they might be addressed. These individuals were:

- Mrs Habiba Bagirova, State Committee for Ecology, Chief of Governing an Expert Ecological Observation.
- Mr Azer Aslanov, State Committee for Ecology, Deputy Chief of Governing an Expert Ecological Observation.
- Mrs Nadejhda Gelman, State Committee for Ecology, Senior Expert
- Dr Rauf Mouradov, State Committee for Ecology, Co-ordinator of the Azerbaijan National Environmental Action Plan.
- Mr Agakerim Najafov, Head of Technical Services, ADDY.
- Mr Kamal Ahmedzade, Director, Baku Railway Wagon Repair Works.

Site visits were also undertaken to the Baku Wagon Repair Works and Balajari Wash Plant. As mentioned in section 3.1.1, there has been an enormous decline in traffic on ADDY since the break-up of the Soviet Union. This has led to a corresponding fall in revenue and this lack of financial stability combined with a hostilities in some parts of the country has meant that there is a huge backlog of investment and maintenance on the railway. Virtually every aspect of ADDY has suffered, resulting in large scale environmental problems principally related to the carriage of oil and other hydrocarbons on the network and to land contamination and environmentally unacceptable discharge levels at many facilities.

There are 15 principal areas of concern for ADDY, where facilities and infrastructure have serious environmental problems of which the first three on the enclosed list pose the greatest environmental concern. These are:

1. Baku Locomotive Depot
2. Baku Wagon Depot
3. Balajari Washing station
4. Disinfection and Washing station at Alyati Main station
5. Shirvan station
6. Girdani-Lenkoran-Kamyshovka-Astara stations
7. Refrigerator Wagon Depot at Alyati Main station
8. Dwelling houses belonging to the Railway at Alyati station
9. Brick factory of the "Azjelstroy" Unit
10. Alyati Main station
11. Shirvan track district
12. Shirvan signalling and communication district
13. Wagon depot at Shirvan station
14. Turn-around locomotive depot at Shirvan station
15. Zyrya-Pirallachi station

(a) Baku Locomotive Depot

The Baku Locomotive Depot is located within Baku city, at Beyuk-Shor station The total area of the Depot constitutes 123,147 m^2. The total number of employees is 671; the enterprise has operated around-the-clock since 1957.

Baku Locomotive Depot specialises in technical servicing and current maintenance/repair of electrical locomotives and EMU's, manufactures various parts and spare parts and services passenger trains operating on the main line and suburban electrical lines. The Depot consumes annually 65,000 m^3 of water.

The source for the water supply is the water supply section of the Baku division of the Azerbaijan Railway and the water reserve wells available in the area.

The water is consumed mainly for the cleaning of the premises, for filling of EMUs, washing of the rolling stock and for the shower-room and laundry.

The washing solution for the rolling stock is of calcinated soda. Periodically contaminated water is discharged into the sewerage. Annual discharge of waste water is 48,000 m^3.

From the time the depot was commissioned in 1957 the sewerage has never been connected to the city communications. Contaminated waste waters are discharged without purification with active substances to a pit, where an oil pool is being formed and floods the adjacent territory. A record of the quality of water being discharged is not kept, the water is not reused and cleaning machines do not function.

The depot does not have a boiler-house of its own and a nearby the oil-refinery will not supply hot water due to non-payment. According to the 1995 statistics, discharge/emissions of toxic substances into the atmosphere make up 8,990 tonnes, among them gaseous substances of 8,713 tonnes, including sulphurous anhydride at 2,710 tonnes, carbon monoxide at 3,595 tonnes, nitric oxide at 1,383 tonnes and other gases at 1,025 tonnes. In 1996 funds for environmental measures were not spent.

(b) Baku Wagon Works

Baku Wagon Depot is located within Baku city. It occupies 24,250 m^2. The total labour force is around 250 people.

It is a high capacity industrial enterprise designed for the servicing and repair of railway wagons. Its throughput is around 500 wagons per year for ADDY and a further 500 for private clients. Presently the Wagon Works repair only oil, petrol or kerosene wagons (Plate 1).

Typical repair activities include welding, wheel reprofiling, repair of bogies, checking the integrity of tanks buy filling with water, cleaning and degreasing (Plates 2 and 3).

The major environmental issues at the Baku Wagon Works include emissions to air, the discharge of water and wastewater via life-expired industrial drainage and sewerage systems.

Part of the EBRD loan to ADDY is designed to assist in the partial restructuring of the Wagon Works.

(c) Balajari Wash Plant

The Balajari (or Baladshary)Wash Plant is situated at Balajari around 10km from Baku. It washes the interior of tanks between a change of product or before depot repairs or major overhauls at the Baku Wagons Works.

The plant consists of three tracks (Plate 4) holding 15 wagons each with two platforms at 175m running at tank top level (Plate 5). Tanks are cleaned out with steam lances and then rinsed with hot water. Steam for the process comes principally from a 1954 vintage steam locomotive (Plate 6) run on recovered oil (mazut): two new Canadian Volcano-Osveh boilers have been installed but are used rarely because of the cost of diesel fuel.

There are also two tracks for the interior cleaning of liquid bitumen tanks although this has not been operational since 1995. When it was, bitumen was heated and discharged into an adjacent pond (Plate 7). The pond currently contains around 2000 tonnes of bitumen.

There are a number of major environmental problems associated with the Balajari Wash Plant: principal amongst these is the discharge of wastewater. A mechanical oil separation plant is in operation (Plate 8) which leaves between 40 - 400 mg of oil/litre, well in excess of the 0.02mg permitted.

The bitumen pond is a major land contamination issue with chemical sludge also regularly dumped into it.

Partial reconstruction of the Balajari Wash Plant is one of the components of the EBRD loan which will provide for a new wastewater system and rehabilitate the long defunct exterior washing facility. However, even following these investments major problems will remain at Balajari which will need to be addressed.

(d) Other priority areas

Discussions with the State Committee for Ecology revealed a number of other areas of concern. Environmental problems were noted at Aliat Main Station including emissions to air and effluent discharges caused by the washing and maintenance of cargo wagons.

The problem of oil spills was also mentioned by the State Committee for Ecology although, unlike Georgia, no major spills have been reported. However, the railway crosses nearly all of the important rivers and water courses in Azerbaijan and a national park near the border with Georgia. Like Georgia, they would wish to see an emergency response programme in place.

The State Committee for Ecology would quite clearly wish to see more interaction with ADDY and the compliance with ADDY of state environmental limits. They are concerned by the current investment programme and would wish to see more funds provided for the improvement of infrastructure and rolling stock in order to reduce the risk of major incidents on the line.

Other areas of concern were pollution along the track particularly at river crossings and stopping points, and waste management.

5 PROJECT ENVIRONMENTAL IMPACTS

5.1 Capital Investment Programme

5.1.1 Introduction

The immediate impacts of the overall investment programme are likely to be those which will result from the capital elements and will relate principally to the track replacement programme. Environmental impacts will include potential problems arising from the removal of contaminated ballast and the disposal of waste.

5.1.2 Track renewal

Track renewal will take place over 50km of life-expired sections of the track between Balajari and Alyat. The programme will involve complete track replacement, including supply and installation of new ballast and the re-profiling of track formation to eliminate problems with track drainage. The proposed renewal will be with concrete sleepers fastened with elastic fasteners.

Overall the impact of track replacement is likely to have a beneficial effect on the environment by reducing the risk of derailments and hence major oil spills. If a major incident does occur, improved telecommunications should greatly enhance the response time of the emergency services and decrease the potential contamination effects.

The principal environmental problems which are likely to be encountered include:

- the disturbance of contaminated land and contaminated clinker during the track replacement programme and the necessity of ensuring the safe disposal of such material;
- the requirement to ensure that such contamination does not enter the groundwater system;
- noise and vibration impacts associated with track laying and tamping of ballast;

5.1.3 Baku Wagon Works

The investment in the Baku Wagon Works will involve the design and partial reconstruction of the facility. Again, the overall effect is likely to be beneficial but several short-term impacts may well arise from reconstruction of a major depot situated in the heart of Baku. These will include construction and demolition issues such as noise, vibration and increased site traffic.

A great deal of the land on which the Wagon Works is located will be heavily contaminated principally by hydrocarbons and it will be extremely important to ensure the proper investigation, clean-up and removal of this contamination prior to any new construction taking place.

It is regrettable that no moneys have been made available as part of the present investment programme to address the contamination on-site. This will need to be a key part of future Environmental Management Plan for the railway.

5.1.4 Balajari Wash Plant

The investment in the Balajari Wash Plant will involve the supply of equipment for the chemical separation of oil and water, the establishment of a new external cleaning plant and the general modernisation of the interior washing plant.

As with the Baku Wagon Works the overall effect is likely to be beneficial but it is again regrettable that moneys have not been made available for general contamination clean-up including the bitumen pool. This will also need to be a key part of the Environmental Management Plan for the railway.

5.1.5 Signalling and telecommunications

Similarly new signalling and telecommunication systems will significantly improve the environmental performance of the railway by increasing response times for incidents on the track.

Impacts that may occur include:

- noise arising from new signalling equipment during construction and operation; and
- possible electromagnetic effects of new signalling equipment.

5.2 Restructuring

The 5-year Business Plan for the railway, developed as part of this project, recommends the division of ADDY into a number of strategic business and service units. It is proposed that ADDY has two main business units:

- a passenger business unit; and
- a freight business unit.

These will be served by two new service units, namely:

- rolling stock; and
- infrastructure

Two further units will provide the overall corporate functions for the restructured railway. These will be:

- corporate services (including, *inter alia*, finance, procurement, IT and legal services); and
- ancillary services.

The reorganisation of ADDY into these units will create a number of new environmental challenges which will cover the entire operations of ADDY from the disposal of waste, through the procurement of new rolling stock to good office working practices.

5.2.1 Passenger Business

The following key areas are considered to have an impact on the environment during the period of the first 5-year Business Plan.

Passenger stations improvements

- construction impact of new buildings or changes to existing buildings;
- noise and vibration arising from construction;
- chemical or fuel pollution of water courses arising from demolition and construction;
- alterations to services; and
- Increased road feeder traffic.

Closure of passenger stations

- disposal of waste materials;
- disconnection of services; and
- clean-up of site area

New Passenger Coaches

- Environmental benefits include:
    - controlled emission toilets and the non disposal of effluent to track;
    - reduction in noise and vibration due to better suspension although there will be a potential corresponding increase in noise and vibration due to the increased speed of trains.

5.2.2 Freight Business

Freight Business developments and key activities included in the 5- year Business Plan that may have an environmental affect include:

- closure and removal of equipment at several current freight stations - locations undefined at present;
- removal of tracks and cranes;
- removal of redundant buildings; and
- changes to services at various locations.
- concentration of freight activity at main centres - locations undefined at present;
- new handling equipment;
- increased road vehicle effect;
- possible new buildings and services including the creation of improved and new container terminals; and
- increased risk of incidents due to more trains although mitigated through better track and signalling control

5.2.3 Rolling Stock Service Unit

The Rolling Stock Serice Unit will be responsible for the purchase and maintenance of all rolling stock including all locomotives, wagons and carriages. it will also be responsible for the disposal of old rolling stock.

Large volumes of industrial waste will be generated by the restructuring of the railway and the need to scrap redundant track and rolling stock. Well in excess of 0.5 million tonnes of industrial waste will need to be disposed of. Particular problems are likely to include:

- scrap metal;
- asbestos in coach linings;
- PCB's in diesel locomotive transformers;
- plastic seating;
- de-greasing agents;
- oils and heavy metals including lead, chromium, magnesium and zinc in coach wagon and locomotive components; and
- CFC's in refrigerated wagons.

A waste disposal strategy will need to be developed which will form part of the SR's Environmental Management Plan (see section 6). The Environmental Management Plan will need to include procedures for the safe stripping of contaminants and the occupational health and safety issues that will also arise. Most of the waste will need to go to dedicated industrial waste landfill sites.

5.2.4 Infrastructure Service Unit

The Infrastructure Service Unit will be responsible for train control, signalling, communications, electrical and permanent way infrastructure.

Environmental issues will include:

- the safe disposal of surplus line side scrap after track work;
- disposal of old ballast;

- operation of stone quarries;
- visual impact of electrification masts;
- ballast dust whilst track renewal works are in progress; and
- noise whilst work is in progress.

5.2.5 Corporate Services and Health and Safety

The key issues related to the Corporate Services provided for the Azerbaijan Railways reflect the movement towards commercialisation over a 5 year period. The Business plan has specific targets to be achieved year on year during the period of the plan and these include:

- provision of high quality support services to meet business sector needs;
- Co-ordination of policy planning activities to present integrated plans;
- provide centralised accounting and administration for strategic purposes;
- provide a centralised legal function on a company-wide basis.

Items which will need addressing in respect to environmental impact include:

- recycling;
- office environment;
- IT;
- health and safety; and
- accommodation

The main requirements of each activity during the 5 years are as follows:

Corporate planning
This unit will provide policy support to the business units and DG. The environmental issues relate to:

IT and Computer systems
The section will employ around 120 people providing installation and support to the businesses throughout Azerbaijan. The main objectives will be to implement comprehensive modern computer systems and networks to assist business productivity and performance . This should include connections with neighbouring railways. The Information Computing Centre is well equipped with modern computers and there are also computers at other enterprises, stations and depots.

Finance and Control
This section provides accounting and audit support to the businesses through application of networked financial packages. The section will employ 80 personnel mostly HQ based but travelling to offices throughout the network. The plan envisages implementation of robust financial procedures and systems , linked to an IT strategy for development step by step over the 5 year period of the business plan. The key tasks of the function are to prepare and co-ordinate the corporate budget and forecasts and will be responsible for Treasury and Cash control, accounting procedures and debt management.

Procurement
This section will be responsible for the tendering and central purchasing of services and equipment for supply to the businesses . Where appropriate outsourcing procedures will be developed and implemented. Comprehensive capability will be achieved in the first year of the plan and enhanced during the next 4 years of the plan.

Real Estate
The management of property disposal , rent and development will be handled by this division . These will include valuation and presentation to the market working as a support to the businesses to identify and categorise land as operational and non-operational. An action plan

will be developed for implementation during the 5 year period of the plan to dispose of redundant land and exploit commercial opportunities.

Organisation
The organisation section will be responsible for the support to the businesses in implementing the new structures . This division will operate for 2 years then be absorbed within the Human Resources section The key responsibilities will be to establish organisation principles in the development of the corporate plan.

6 COPRPORATE ENVIRONMENTAL MANAGEMENT PLAN

6.1 Introduction

As mentioned in section 2.2, the adoption of an overall environmental management system (EMS) for ADDY, incorporating an Environmental Management Plan (EMP) will be both a fundamental requirement for the loan disbursement to the railway and make good business sense.

The fundamentals of the EMP are:

- the establishment of the correct corporate structure;
- an audit of existing facilities and operations in order to fully understand the current environmental problems which ADDY are facing;
- a thorough legislative review and a comparison with the current compliance status of ADDY;
- development of a priority action plan;
- setting of targets and timescales for meeting the priority action plan.

6.2 Corporate Structure

The 5-year Business Plan envisages the formation of two business units (freight and passengers), two service units (infrastructure and rolling stock) and two corporate units. Each of these units will have a Director who will report to the Director General. It is proposed that a new role of Corporate Environmental and Health and Safety Manager is also created reporting directly to the Director General and with Board level responsibility for environmental issues company wide.

It will be the function of the Corporate Environmental and Health and Safety Manager to set the overall corporate objectives for environmental management in ADDY, prepare the detailed EMP, and to agree overall company-wide directives or policies on issues such as waste management, recycling and energy conservation.

The Corporate Environmental and Health and Safety Manager will have an Assistant Manager located within each of the service, business and corporate units forming a team of seven senior individuals. The Assistant Managers will be responsible for the implementation at unit level of the Environmental Management Plan including setting targets for their business sector, monitoring progress and providing training to key individuals within the various sections of their unit.

6.2.1 Corporate Environmental Commitment

The first priority of the new EMP for the railway will be to develop a corporate environmental commitment which may be embodied in an overall Mission Statement and to set clear goals for environmental improvement over the life of the first 5-year Business Plan. An appropriate Mission Statement may be:

"To transport freight and passengers, quickly, efficiently and safely by offering a high-quality cost-effective service that has due regard for the environment of Azerbaijan. To meet its commitments to environmental protection, as embodied in the Environmental Protection Act and international treaties, ADDY will implement an Environmental Management Plan that will

progressively reduce its consumption of resources, emissions of pollutants and seek to provide for the clean-up of existing environmental problems in its operations and facilities"

Such a statement should be agreed and signed by the Board of ADDY and disseminated to all employees.

6.3 Environmental Management Plan

It will be the principal responsibility of the Corporate Environmental and Health and Safety Manager to prepare and implement an Environmental Management Plan (EMP) for the railway. This section will outline the framework for the plan, the actions required, priorities that have been identified and potential monitoring requirements. Section 8 will identify implementation requirements including responsibilities, training and support.

6.3.1 Framework

The framework for an EMP for ADDY will need to be structured around the following elements:

1. a thorough environmental audit of all ADDY operations and facilities;
2. the implementation of a legislative database that clearly defines the legal responsibilities of ADDY towards the environment;
3. a comparison between the audit findings and the legal responsibilities of ADDY;
4. a definition of the areas for improvement;
5. a prioritisation of these areas;
6. a set of clear, measurable and auditable targets for improvement; and
7. a timescale for measuring progress towards these targets.

6.3.2 Audit

ADDY will need to conduct as a first priority a complete audit of all its operations and facilities. These will include, *inter alia*, all freight depots, passenger stations and maintenance depots as well as office practices, heating, lighting and recycling.

Particular attention will need to be paid to those areas likely to give rise to the greatest environmental problems and these will include:

- emissions to air;
- water and waste water - use and disposal;
- materials handling, storage and transport;
- management of hazardous materials;
- waste arisings, management and disposal;
- noise, odour and vibration; and
- land contamination.

The audit will need to be undertaken by appropriate trained personnel (see section 7) familiar with the operations of the railway and be conducted according to current best practice in environmental auditing. A checklist system is recommended for the audit, covering *at a minimum*, those areas listed above but also where possible examining other issues such as general housekeeping and recommending potential improvement areas such as waste reduction, opportunities for the use of cleaner technology and energy use and conservation.

The audit should be based on:

- discussions with facility personnel;
- an examination of past records relating emissions and discharges; and

- on-site testing and monitoring where records do not exist or are incomplete.

6.3.3 Regulatory Compliance

Volume II of this report provides a review of the current legislation and guidance that ADDY will need to comply with. At present it is unlikely that ADDY hold any of the necessary certificates to show that it is in compliance with regulatory requirements in relation to emissions to air, water and solid waste management.

Based on the review undertaken for this report, ADDY should instigate the setting up of a database of all legislation that it needs to comply with. The database should eventually be sub-divided by facility so that individual facility managers are fully aware of their commitments and compliance status.

A comparison will need to be made by ADDY of the audit findings and regulatory compliance status. Given the history of the railway and the current backlog of investment and maintenance there will be a need for railway to bring many of its facilities and operations into compliance. These areas will need to be prioritised and clear and auditable targets set for achieving compliance within a timescale appropriate to the scale of the problem and the measures required to deal with it.

6.3.4 Priorities for improvement

A number of priority areas and issues will arise from the environmental audit and compliance status of ADDY and appropriate environmental action plans and remediation plans established. A full audit of the railway is a lengthy process and one which was outside the scope of this report. However, discussions between ADDY and the State Committee for Ecology, revealed a number of immediate issues which the railway will need to address. These are:

- Balajari Wash Plant and Baku Wagon Works;
- oil spills;
- emergency response planning;
- pollution along the track at train stopping points and river crossings; and
- waste management.

(a) Balajari Wash Plants and Baku Wagon Works

A limited environmental audit and action plan has been prepared for the Balajari Wash Plant and an action plan for the Baku Wagon Works. In the case of the Baku Works it is recommended that a thorough environmental audit is also carried out and the findings of the action plan reviewed in the light of this. In the case of both facilities the loan disbursement will bring about some environmental improvement.

Much however, will remain to be done and it should be a priority of the EMP to re-audit these facilities and review their current action plans. Priorities for improvement must include stricter discharge controls, the remediation of past contamination and controls on waste management.

(b) Oil Spills

The avoidance of oil spills, particularly in the sensitive national parks is a major area of concern for the State Committee for Ecology. This concern will increase as traffic grows with the opening of new oil fields such as the Tengiz crude oil field operated by Chevron in Kazakhstan and the passage of other oil products from SOCAR (the State Oil Company of Azerbaijan) and from Turkmenistan.

Derailments leading to oil spills will be a consequence of several factors either operating individually or in concert. These factors will include:

- the condition of the track;
- the configuration of the wagon bogies;
- speed of the train; and
- the radius of track curvature;

The track replacement programme which is underway in Azerbaijan and the investment in new track brought about by the EBRD loan, will greatly assist in improving track conditions and hence safety and environmental concerns.

The configuration of the wagon bogies, particularly those which pass through sensitive areas will need to be examined closely. Standard bogies consist of two axles, each with four wheels and the majority of oil transport wagons in use currently seem to conform to this pattern. However, recent developments have included the introduction of four axle bogies supporting a total of sixteen wheels. It is likely that this configuration, allowing a 160 tonne laden load to be transported, is more susceptible to derailment particularly on tight radius curves.

Statistics relating to derailments should be examined and any correlation between bogie configuration, speed and curvature determined. This analysis should result in actions items for the EMP which may:

- make recommendations not to run four axle bogies through sensitive zones and/or limit their speed through such areas;
- place speed restrictions on trains through sensitive zones; and
- recommend possible track re-configuration through sensitive zones to avoid tight radius curves.

In addition, the EMP should clearly state the importance of ensuring that wagons are securely sealed before departure.

(c) Emergency Response Planning and Clean-up

Allied to the risk of oil spills, ADDY will need to enhance its emergency response planning and clean-up procedures both of which the State Committee for Ecology have expressed concerns about.

New signalling and telecommunications will greatly assist in the response time of emergency services but, nonetheless, the EMP will need to address emergency response planning. It should be recommended that an Emergency Response Directive is drafted which will include the formation of an *ad hoc* Emergency Response Group (ERG) chaired by the Corporate Environmental Health and Safety Manager and formed from key members of ADDY in the other directorates *and* appropriate officials from the State Committee for Ecology.

The responsibility of the ERG would be to receive information on an emergency situation, assess the response required and mobilise the necessary resources to limit the potential.

Acting alongside the ERG, ADDY will need to recommend, as part of the EMP, the formation of an Emergency Response Unit, formed from railway personnel and trained in containment and clean-up procedures.

Clean-up procedures should be sanctioned by the ERG, which as it will also contain State Committee for Ecology officials, will be able to co-ordinate and agree actions.

(d) Stopping points and river crossings

The environmental audit will have identified stopping points for trains in potentially sensitive areas near to water abstraction zones, in national parks or in other ecologically sensitive areas.

The scale of any potential contamination problem will need to be assessed in these areas through ground investigations and potential remediation measures sought. Remediation measures which may be recommended in the EMP include:

- the avoidance of stopping locomotives in potential 'hot spots';
- oil trap mats in sensitive areas and on bridges to absorb spillage from tanks and locomotives.

(e) Waste management

Waste management will be a major issue for the restructured railway given the enormous surplus of rails, sleepers, locomotives and wagons that will need to be disposed of.

Much of this will contain toxic substances including:

- asbestos in coach linings;
- PCB's in diesel locomotive transformers;
- plastic seating;
- de-greasing agents;
- oils and heavy metals including lead, chromium, magnesium and zinc in coach wagon and locomotive components; and
- CFC's in refrigerated wagons.

A waste disposal strategy will need to be developed which will form part of the SR's Environmental Management Plan. The EMP will need to include procedures for the safe stripping of contaminants and the occupational health and safety issues that will also arise.

Procedures will need to be put in place to ensure that the waste goes to dedicated industrial and special waste landfill and/or incinerator sites and to ensure its safe transport to such sites. These sites will need to be identified as part of the EMP.

For the future the EMP will need to recommend current best practice in waste management based on the waste hierarchy of:

MINIMISE
⇓
RE-USE
⇓
RECYCLE
⇓
INCINERATE
⇓
LANDFILL

6.3.5 Targets and timescale

It is essential that ADDY sets a series of clear targets with respect to regulatory compliance and good environmental management practice and provides these targets with an appropriate timescale. Ambitious targets are unlikely to be met, no targets at all will mean that compliance will not be achieved and timescale must similarly being realistic to the goal that has been set.

Specific targets for operational performance in relation to issues such as wastewater discharges and air emissions can only be set by reference to current performance which itself can only be measured through the environmental audit. A thorough detailed audit is, therefore a first priority.

A reasonable timescale in which to audit all facilities would be five years, coinciding with the rolling business planning round (see section 6.2.2). For the emission and discharge of specific pollutants timescales are less easy to define as they will depend on the scale of the problem and the financial resources required to address it. Priority should be given to addressing the concerns voiced by the State Committee for Ecology and indeed some of these could be rapid and low cost. Critically examining the accident record, for example, and recommending lower speeds and/or bogie configurations does not require an enormous investment.

7 RESOURCES, IMPLEMENTATION AND SCHEDULING

7.1 Institutional Issues

The principal roles of the Corporate Environmental and Health and Safety Manager and the Assistant Managers within the Directorates of the restructured ADDY are described in section 6 above. For the environmental performance of the railway to improve it will be critically important that:

- the new Board of ADDY take the environmental commitments of the railway to be a central part their overall corporate strategy;
- the roles and responsibilities of the Corporate Environmental and Health and Safety Manager and the Assistant Managers within the directorates are similarly recognised to be of central importance within the company;
- these individuals are given appropriate authority through the reporting structure of the organisation;
- where necessary the required funding, resources and/or support is made available to bring about environmental improvements to the operation of ADDY;
- environmental training is provided where necessary; and
- the Board of ADDY have a transparent reporting structure so that both employees and the general public are made aware of their environmental performance.

As well as the key environmental managers within the company it will be equally important for all facility managers and indeed all employees to have an increased awareness of their role within the overall environmental performance of the company. In particular their should be:

- an individual and collective duty of care towards the environment;
- a roll-down of company environmental commitments to the site specific level; and
- a requirement amongst all employees to review environmental performance specific to their activity within the company.

7.2 Training

7.2.1 Corporate Environmental Manager and Assistant Managers

Professional training will be required for those individuals who will fulfil the key environmental roles within ADDY. This will need to be undertaken as part of the implementation schedule for the EMP and involve formal courses in environmental management and auditing, probably through an overseas institution (for example, the UK Environmental Auditors Registration Association - EARA) as well as short periods of secondment in Europe to rail companies that have developed EMP's, for example Railtrack in the UK or any of the European railway companies.

It will also be important for these individuals to be given guidance and training in the further training of those individuals at specific facilities and operations in ADDY who will be instrumental in implementing the EMP. This 'train-the-trainers' approach will ensure that corporate environmental goals are linked to site-specific practices

7.2.2 Facility and operations managers

Operational level individuals with responsibility for site specific environmental performance will be trained by Assistant Corporate Environmental Managers attached to each of the six directorates.

Training needs will be governed by the needs of the specific facility but will need to include technical issues such as the:

- guidance in the preparation of environmental management plans and action plans for their specific facility;
- guidance on follow-up site audits; and
- guidance on specific monitoring requirements.

7.3 Communications

The success of the EMP will be dependent on effective communication between the corporate environmental managers and the facility and operations managers who will have day to day responsibility for its implementation.

At the corporate level information will need to be rolled down to operations and facilities: This information will include:

- changes in environmental legislation or guidance affecting the facility or operation; and
- corporate policy or directives on issues such as energy efficiency, waste management, waste minimisation and recycling.

Similarly upward channels of communication will need to be open from facility managers to directorate level. This will enable early problems in meeting targets to be recognised and addressed as well as potential opportunities for further improvement incorporated into the corporate strategy.

7.4 Implementation and scheduling

Implementation of the EMP will not be simple or rapid and this should be recognised at the outset in order to avoid unrealistic expectations. A suggested implementation schedule over the course of the first 5-year Business Plan may be as follows and in Table 1 overleaf.

ACTION ITEM	SCHEDULE (within 5 year plan)
Agree corporate policy	Month 1
Dissemination to staff	Month 1
Training of environmental managers	First 6 months and on-going
Training of operational managers	Months 6 - 9 and on-going
Begin audit of facilities	Begin month 9 - end of year 5
Register/database of legislation	Complete by end of year 1
Establish priority actions	Complete end of month 18 and on-going revision
Begin priority actions	Begin month 18 and on-going
Monitoring	On-going

8 CONCLUSIONS - CURRENT PROBLEMS FUTURE ISSUES

This report has examined the current environmental problems facing Azerbaijan Railways and the likely impacts that will arise through the proposed investment programme of the EBRD/EU-Tacis and through the restructuring of the railway.

The investment programme will largely generate environmental benefits through improved track, track maintenance, signalling and telecommunications. However, it is important that the environmental impacts that could arise through these activities are also understood and addressed.

By far the largest environmental challenges that will face the railway will arise through the restructuring of ADDY and its division into separate business and service units. The railway is faced with an enormous stockpile of redundant equipment, wagons and locomotives, and by huge problems of land contamination and emissions, non-compliant with current legislation and best practice.

An Environmental Management Plan for the railway is both an essential requirement of the loan disbursement and makes good business sense for the restructured railway. The EMP which has been outlined in this report, and discussed with relevant officials in the State Committee for Ecology and ADDY, sets out a framework for the future. It is essential that the overall corporate objectives outlined in the EMP are fully integrated into the planning of ADDY and that the new Board gives due consideration to the serious nature of the environmental issues it will face.

The reversal of years of neglect of environmental problems will not be without cost and it will be for the new Corporate Environmental Manager of ADDY to prioritise actions and seek Board approval for funding. It will be important for the future viability and profitability of the railway that these issues are dealt with as a matter of urgency.

9 FIGURES

AZERBAIJAN/GEORGIA RAILWAY

GIBB
LAWGIBB Group Member

AZERBAIJAN MAIN RAILWAY LINES

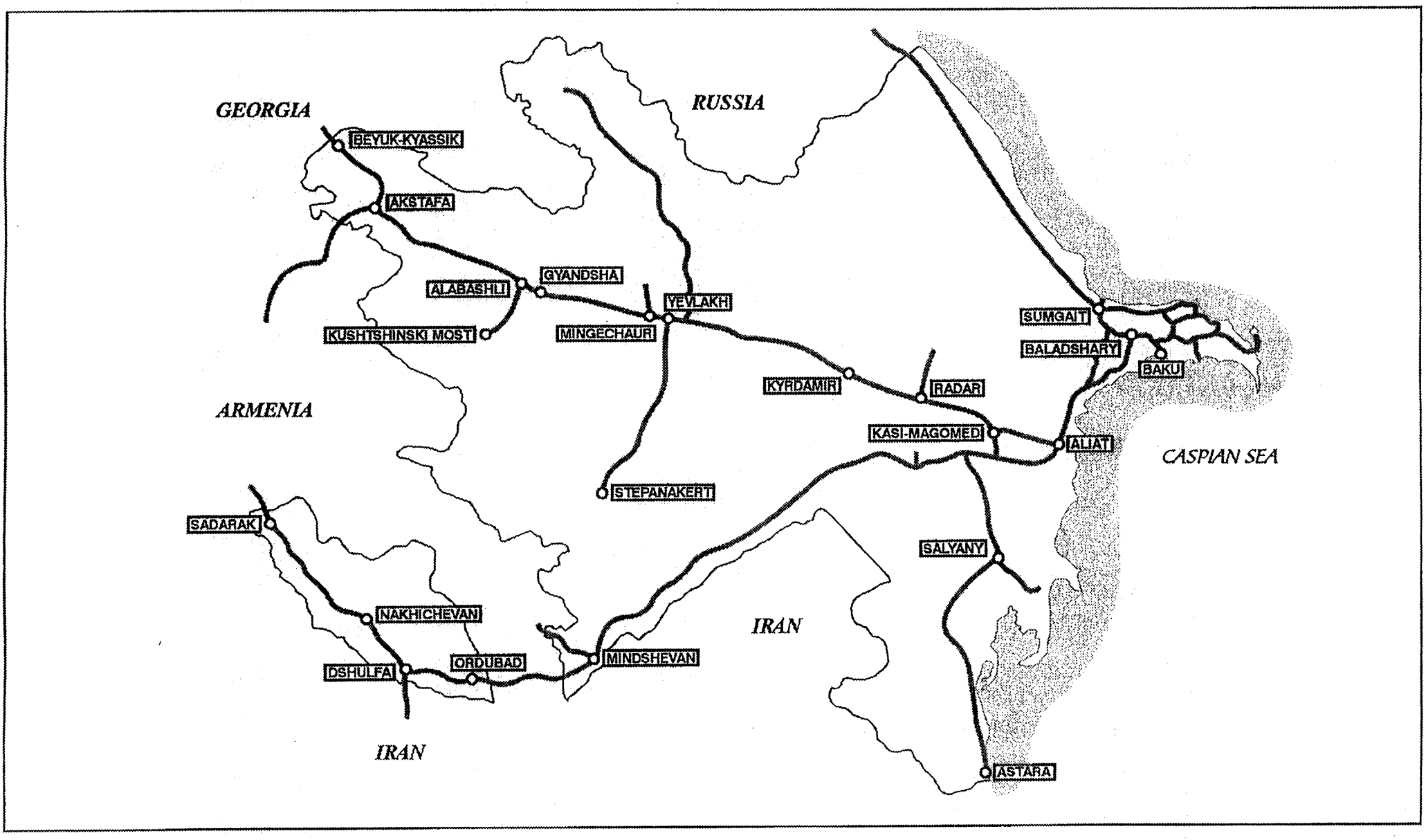

FIGURE: 1

10 PLATES

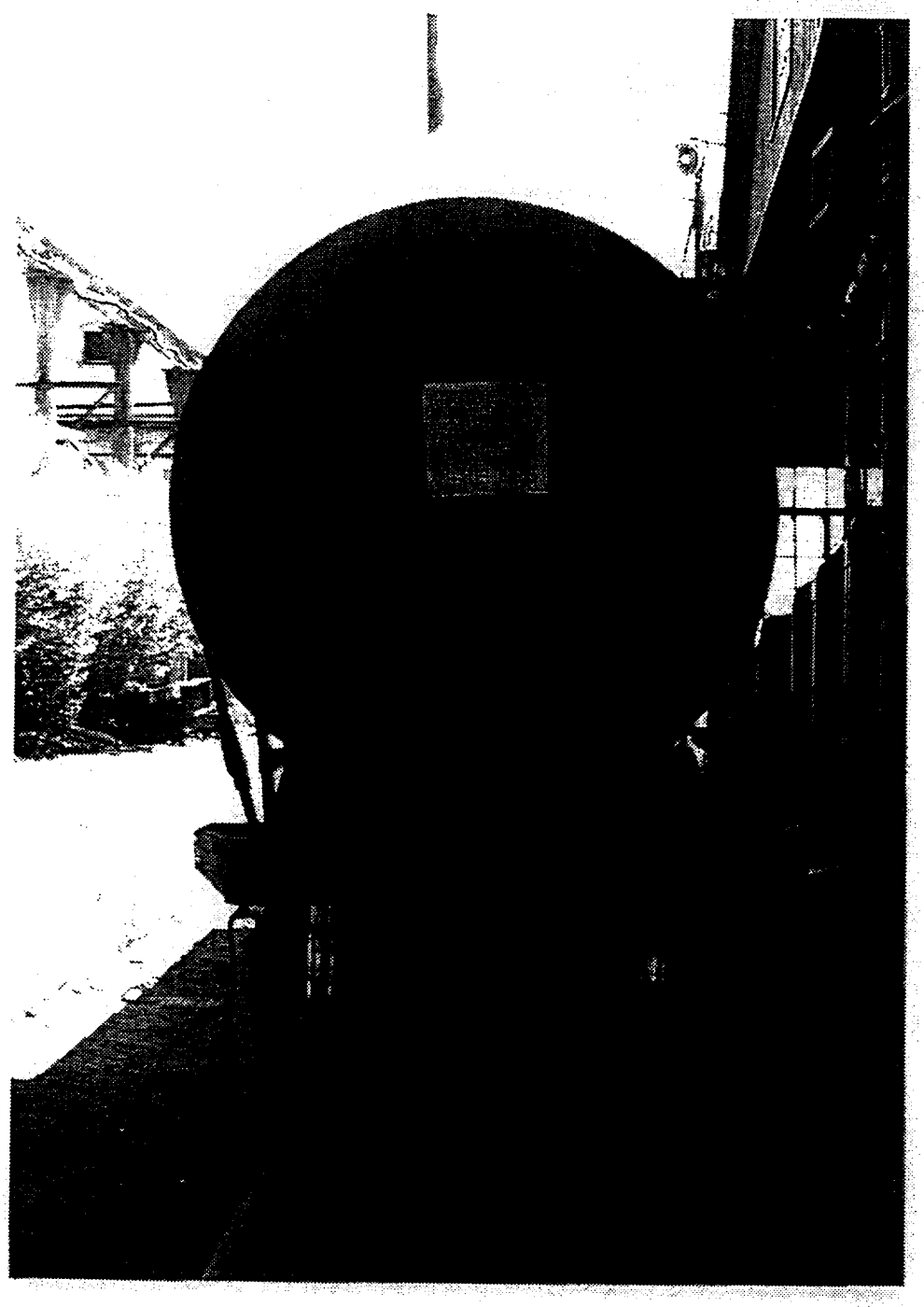

PLATE 1	
AZERBAIJAN RAILWAYS	
Baku Wagon Works. Oil tanker after repair and service.	
Job Number: J98232	Approved by:
Date: October 1998	Scale: Not Applicable

GIBB Environmental
GIBB House, London Road
Reading, Berkshire, RG6 1BL

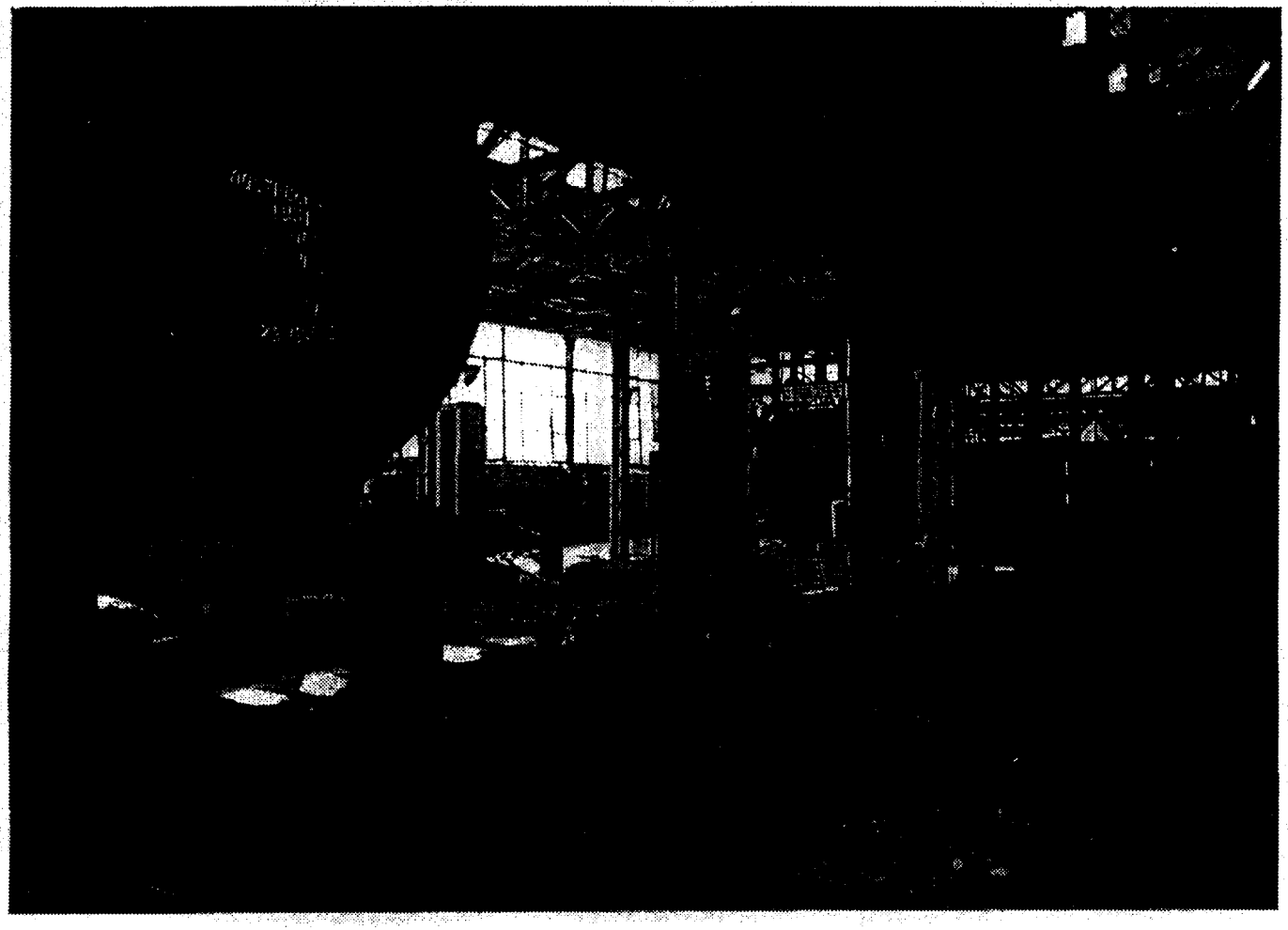

PLATE 2	
AZERBAIJAN RAILWAYS	
Internal view of the repair shed at the Baku Wagon Works	
Job Number: J98232	Approved by:
Date: October 1998	Scale: Not Applicable

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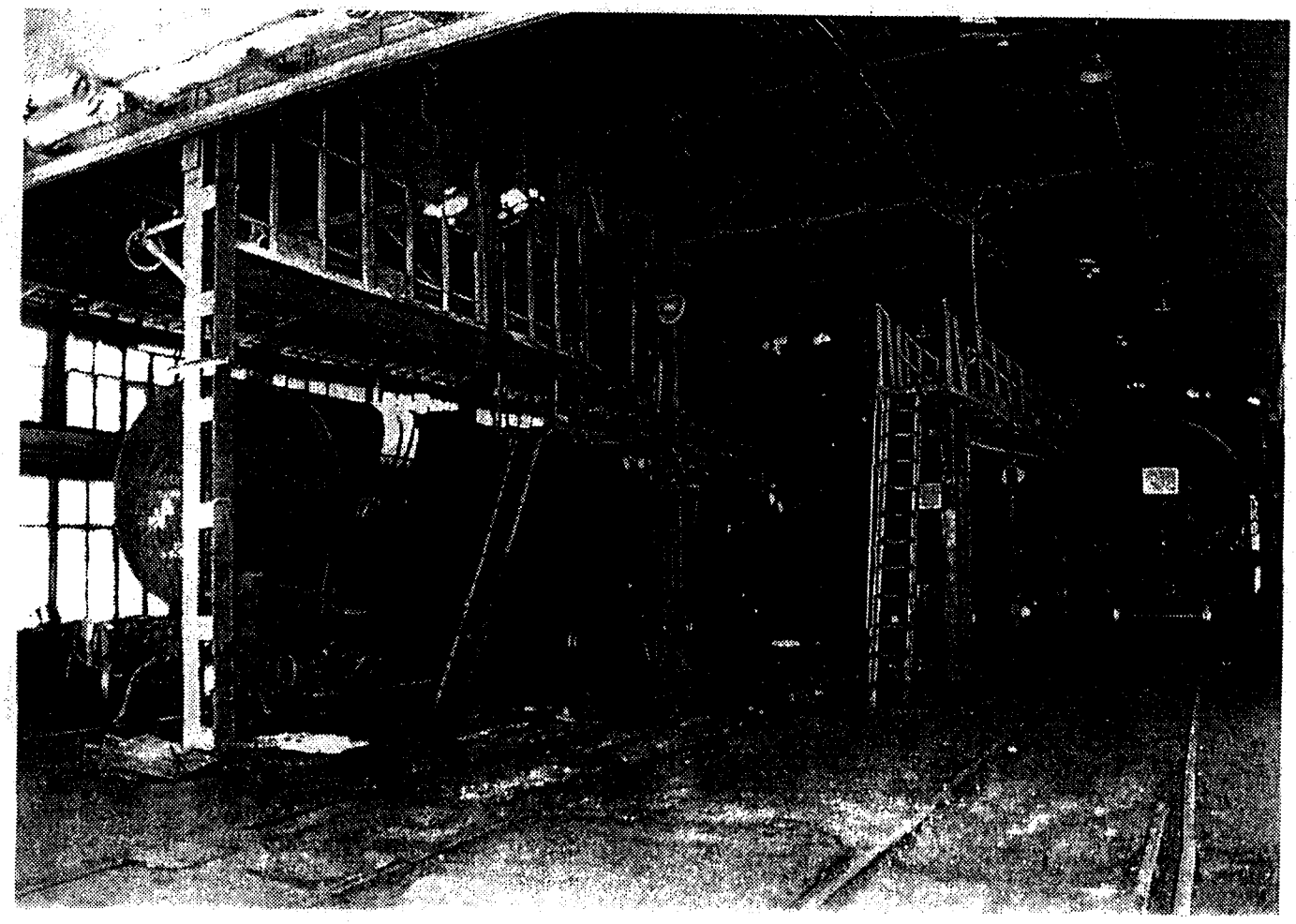

PLATE 3	
AZERBAIJAN RAILWAYS	
Baku Wagon Works. Shed used for checking the integrity of oil wagons	
Job Number: J98232	Approved by:
Date: October 1998	Scale: Not Applicable

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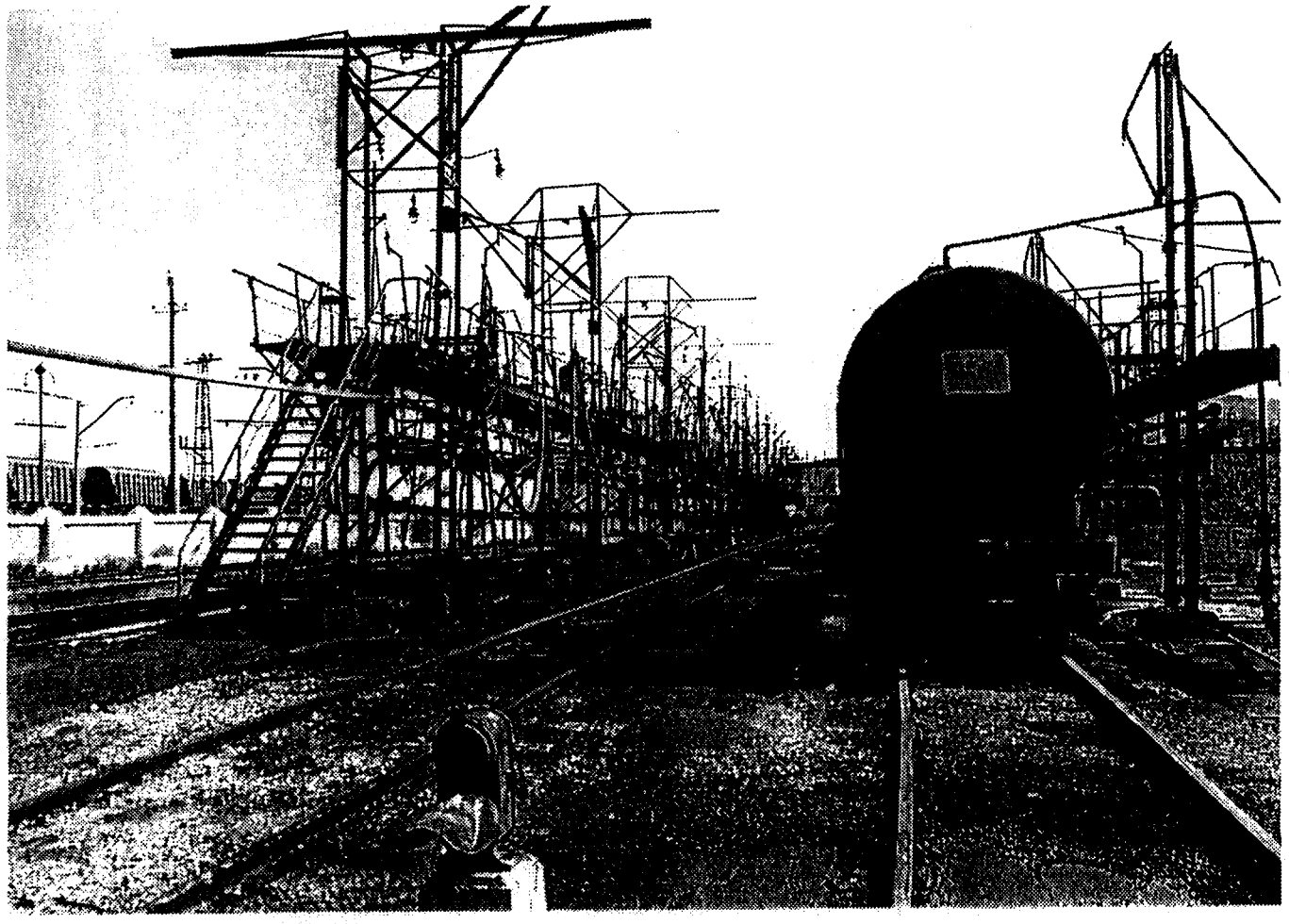

PLATE 4	
AZERBAIJAN RAILWAYS	
Balajari Wash Plant showing cleaning gantry	
Job Number: J98232	Approved by:
Date: October 1998	Scale: Not Applicable

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PLATE 5

AZERBAIJAN RAILWAYS

Balajari Wash Plant showing upper level walkway of the cleaning gantry

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Date: October 1998	Scale: Not Applicable

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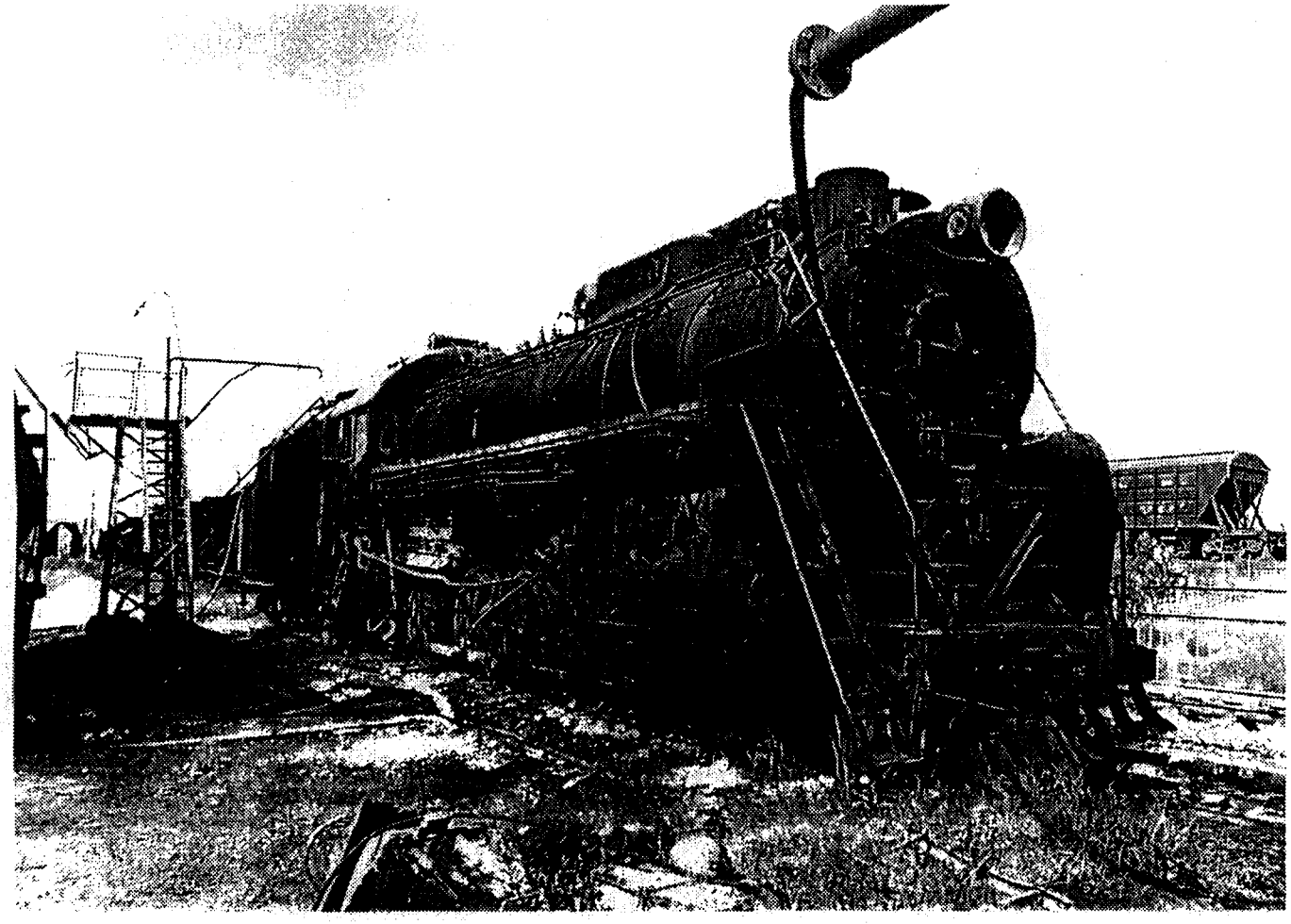

PLATE 6

AZERBAIJAN RAILWAYS

Balajari Wash Plant. 1954 locomotive used for steam generation.

Job Number: J98232	Approved by:
Date: October 1998	Scale: Not Applicable

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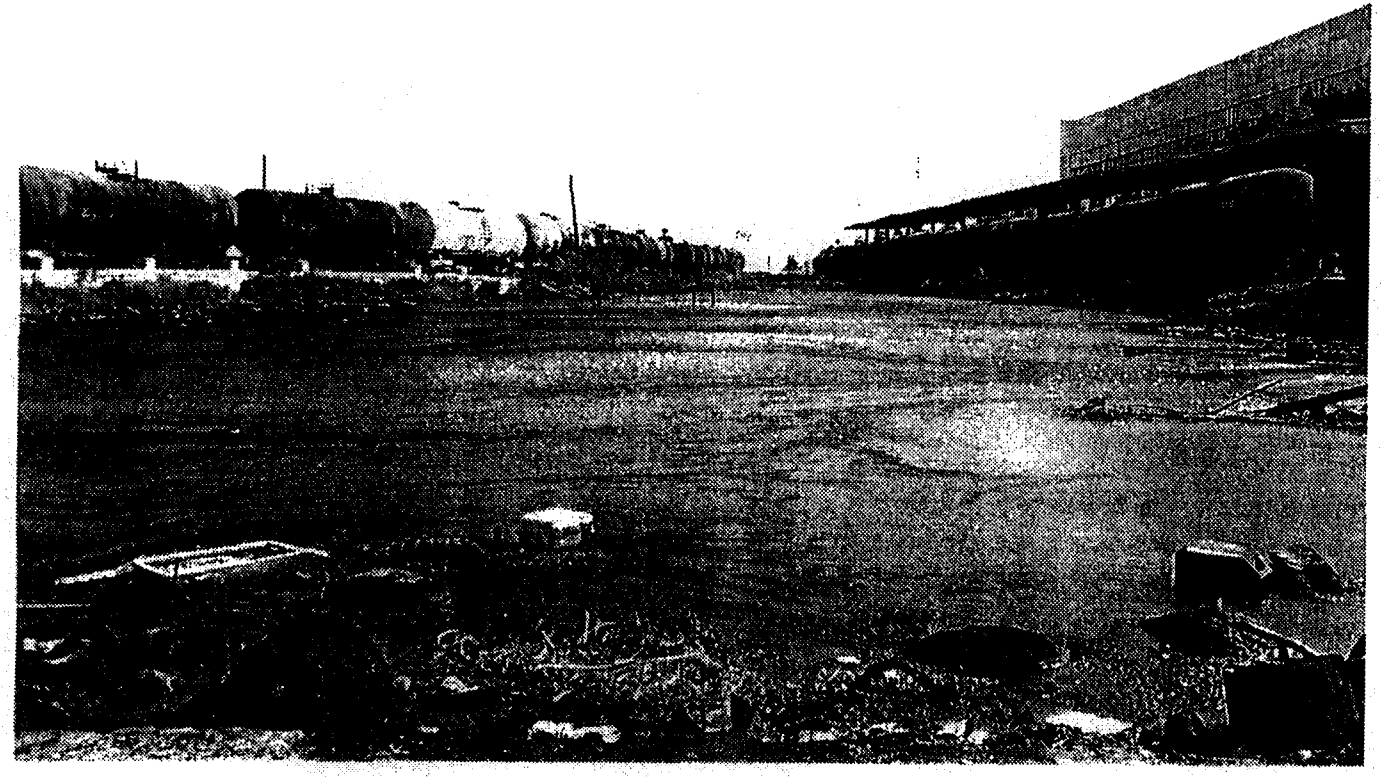

PLATE 7

AZERBAIJAN RAILWAYS

Balajari Wash Plant. The bitumen pool.

Job Number: J98232	Approved by:
Date: October 1998	Scale: Not Applicable

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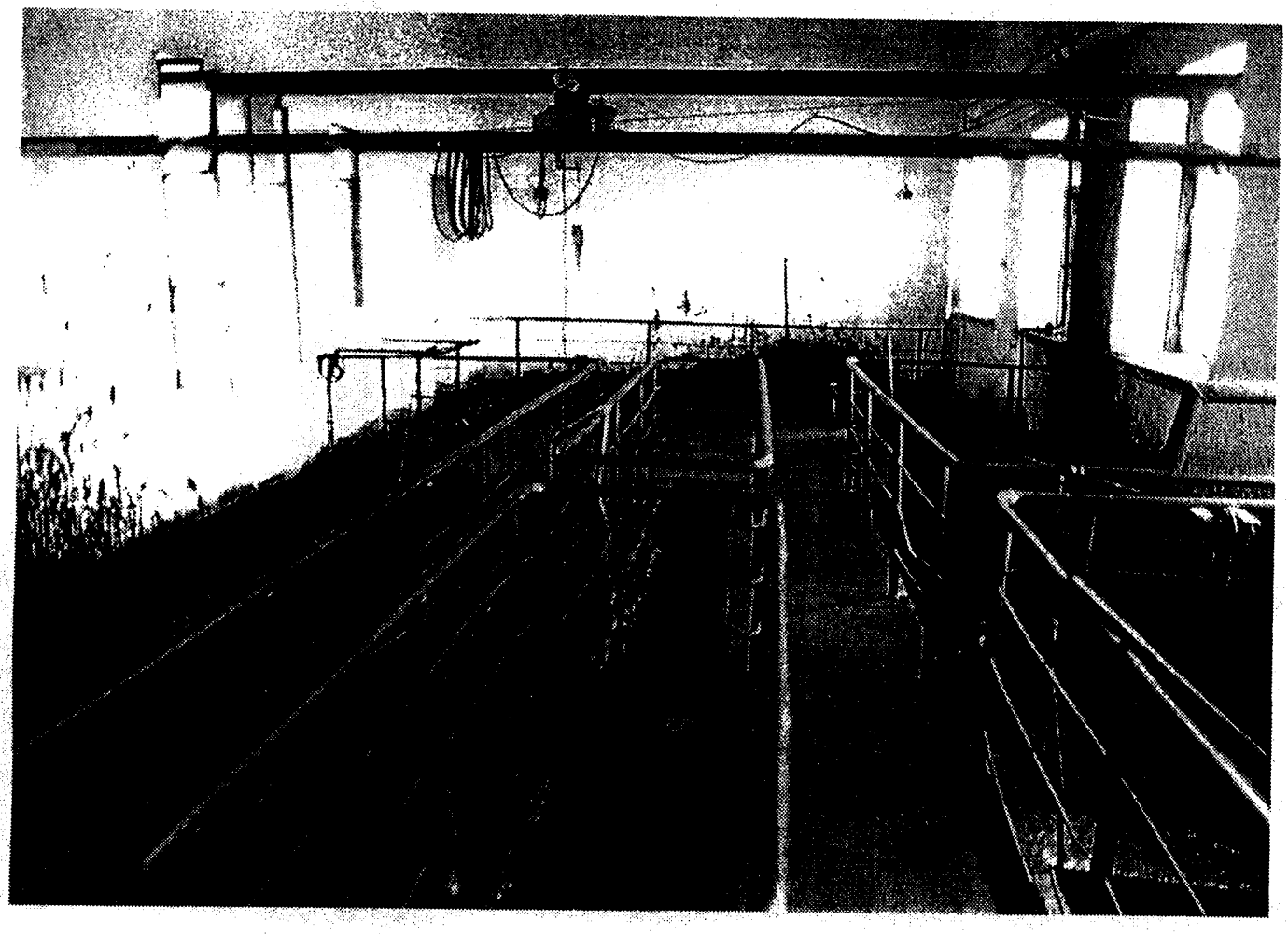

PLATE 8

AZERBAIJAN RAILWAYS

Balajari Wash Plant. Interior of the mechanical oil/water separation building.

Job Number: J98232	Approved by:
Date: October 1998	Scale: Not Applicable

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Restructuring of Azerbaijan Railways

Environmental Management Plan
Volume II
Environmental Legislation and Structures

Restructuring of Azerbaijan Railways

Environmental Management Plan
Volume II
Environmental Legislation and Structures

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EXECUTIVE SUMMARY

This report constitutes Volume II of the Environmental Management Plan for Azerbaijan Railways (ADDY). It outlines the environmental administrative structures and legislation in Azerbaijan. A full understanding of this legislation and the need to comply with specific environmental standards will be a key issue to be addressed in future environmental management planning.

It is intended that this report will form a starting point for the new Corporate Environmental and Health and Safety Manager of the railway, enabling a comprehensive legislative database to be compiled.

1 ENVIRONMENTAL ADMINISTRATIVE STRUCTURES

1.1 Legislative Authorities

Azerbaijan is a presidential republic composed of 67 administrative territorial units (districts), including the currently occupied Karabakh region and Nakhchivan Autonomous Republic.

The basic principles of environmental legislation in Azerbaijan are stated in the Constitutional Act of Independence, which was later adopted by Constitution, and the Law of the Azerbaijan Republic on Environmental Protection and Utilisation of Natural Resources. The Constitution of the Republic of Azerbaijan, adopted in 1995, specifies that the environment and all natural resources of the Azerbaijan Republic belong to the people of Azerbaijan. It states that citizens of the Republic are obliged to take care of the environment and to protect its wealth. The Government, on behalf of present and future generations, takes necessary measures for the protection and scientifically justified and rational use of land and its resources.

1.2 Environmental Administration and Agencies

The main body implementing state policy in the field of environmental protection is the State Committee for Environmental Protection, which subordinates directly to the president of the Azerbaijan Republic. The State Committee has a head office in Baku, two specialised departments, 29 territorial municipal, interdistrict and district ecology committees.

The State Environmental Committee supervise the development of all standards and requirements concerning protection of the environment, and carry out state control over the status and utilisation of natural resources.

The national state monitoring of the environment is implemented by the State Hydrometeorology Committee and State Committee for Environmental Protection. Local monitoring is entrusted to companies utilising or having an impact on natural resources. They are obliged to include this provision in their documentation.

The responsibilities of State Committee for Environmental Protection, in accordance with the existing legislation, include:

- development and implementation of the state environmental policy;
- development of recommendations concerning measures to protect nature;
- provision of state environmental expertise for new and existing projects and developments;
- suspension or closing down of enterprises which fail to meet the requirements of environmental legislation;
- inspection of operating enterprises;
- issuing of permits for the allowed discharge of pollutants; and
- suspension of financing any construction in case of violation of environmental laws.

The local (district and municipal) ecology committees subordinate directly to the State Committee for Environmental Protection and perform the role of state control body, controlling the territory within their jurisdiction.

1.3 Permitting Authorities

The procedure for permitting industrial installations is based on the law "On Environmental Protection", which includes the following aspects:

- maximum allowable (or permissible) concentrations of toxic pollutants (MAC or MPC) - these constitute the basis for developing standards of permissible environmental loading (MAC, known as "PDK" in Russian language, is normally calculated in mg/m^3);
- maximum allowable level of noise, vibration, magnetic fields, and other harmful agents;
- maximum allowable level of radiation;
- maximum allowable waste output per specific time limit and per specific agent (known as "PDV/PDS" in Russian) - set according to the specific function and conditions of the site;
- maximum allowable use of pesticides in agriculture;
- standards for environmental loading;
- maximum allowable standards for toxic substance residues in food products;
- the obligation to respect protected zones around any industrial or other type of site; and
- the requirement for final products to meet environmental standards.

PDK standards are determined for the following:

- specific air pollutants;
- specific surface water pollutants; and
- specific soil pollutants.

PDV/PDS norms are calculated for each industrial site on a time and pollutant basis as a function of the local conditions of site operations.

The "Temporary Allowed Waste Output" (known in Russian as VCV) refers to the limits imposed by the permitting authorities for industrial sites which cannot meet the PDV/PDS norms without changing its main production technology.

All permissible standards for industrial environmental impacts are determined by state-empowered environmental protection agencies, state ecological examination committees and the state agencies for sanitary and epidemiological control. The Department of Sanitary and Epidemiological Control now work under the authority of the Ministry of Health.

These agencies are known as "SAS" and have a reputation for fierce resistance to whatever they consider as improperly prepared or poorly completed work in the field of industrial environmental impact assessments.

All industrial projects must be co-ordinated with both the Committee for Environmental Protection and with the Sanitary and Epidemiological Control officials at the local level in cases where the project is of local importance. If the project is likely to effect several regions it should be co-ordinated at both the state and local levels. Based on the predetermined standards, industrial sites are assigned allowances for waste output in all forms, including gaseous emissions, waste water/effluent discharges, and industrial, urban, or other solid waste.

1.3.1 Permitting Process

Land

The land on which an industrial installation is to be developed must be bought or leased. The local authorities in the region must be contacted in order to initiate the construction permitting process.

Project Authorisation
Once local authorities in the region have issued a Decree authorising the lease or sale of the land for development as an industrial site, the project will require further agreement from the following entities:

- local architectural authorities;
- local environmental authorities;
- local sanitary authorities (Ministry of Health, Department of Sanitary and Epidemiologic Control);
- local fire authority;
- local technical inspection (Gostechnadzor); and
- local energy commission (for energy use limits) as there might be electricity shortages in some regions.

The control is normally accomplished in two stages:

- the preliminary stage covers the technical and economic foundation of the project; and
- the final stage covers the construction and operational design of the project.

Documentation Required
The most important issue is obtaining permission from the State Committee for Environmental Protection, which will require:

- the carrying out of an environmental impact assessment by an Azerbaijan company holding a proper state license for such work or by officials of Sate Ecological Examination Department;
- a State Ecological Expertise, ordered by the Committee for Environmental Protection at the investor's own expense; and
- an (optional) Public Environmental Expertise. This step is not obligatory but can help to influence public opinion, particularly if carried out by experts with a serious reputation, and producing an independent ecological report of the project.

All documentation must be prepared in the Azerbaijani language.

Construction and Design
The actual project implementation must be carried out by a specialised Azerbaijan company properly certified for such activities, meaning it holds a special state license for designing industrial facilities. The basic western design will have to be adapted to Azerbaijan standards in order to comply with the "Construction norms and rules" (standards, used in the soviet system but still in force).

Normally, the contractor that prepares the Azerbaijan version of the construction and design documentation is also called upon to co-ordinate the project with all local authorities.

Property Registration
The purchase or lease of all lands is to be registered with the Department of Land Resources. Upon completion of construction, the project owner must register the construction with the same Department of Land Resources, and obtain a certificate of property (without which no fixed property can be later sold).

This process can take from 30 to 90 days, depending on how well the basic documents have been prepared.

In the case of demolition of existing structures, agreement must be obtained from the owner of the land (if leased) and the State Architectural Committee (for buildings that have a historic and/or cultural value).

All demolition must be registered with the Department of Land Resources.

On-Going Legal Support
On-going legal support is strongly advised for all such projects, making use of experienced and certified Azerbaijan legal counsel holding state licences and contacts with local authorities and local institutes.

Environmental Permits
As mentioned elsewhere, environmental standards are established according to the region and the area in which the site will function.

Unofficial ways are commonly known to be used to achieve the best possible terms, but in the case of large industrial undertakings, it is always more difficult to use them.

1.1.1 Environmental Assessment

The coordination of industrial and other projects is carried out via the environmental expertise, executed on the basis of, and in compliance with, the law "On Environment Protection" and the "Guidelines on Procedures for the EIA Process While Developing Feasibility Studies of Projects of National Economy". These were adopted during the period of the Soviet Union but which in the absence of any alternative guidelines the Azerbaijan State Committee for Environmental Protection still applies.

1.4 Inspection Authorities

Inspections ("Environmental Control") are authorised by the law "On Environmental Protection" in the following forms:

- state service for monitoring environmental conditions,
- state inspections,
- (on site) production inspections, and
- public inspections.

The main authorities for carrying out environmental inspections are as follows:

- Authorities of general competence, such as the Government of Azerbaijan and local administrations;
- Specially empowered State agencies, including:
    - ◊ State Department for Sanitary and Epidemiological Control;
    - ◊ State Department for Land Resources;
    - ◊ State Department of Geology; and
    - ◊ State Committee for Construction.
- State Committee for Environmental Protection;
- State Hydrometeorology Committee;
- Department of Water Resources;
- Department of Forests Protection "Azerbles";
- Department of Air Protection;
- Department of Biodiversity Protection;
- Department of Fish Resources Protection "Azerbalyg"; and
- Ministry of Internal Affairs.

The State Committee for Environmental Protection now coordinates all other state agencies with environmental inspection responsibilities.

On-site production inspections are executed by the industries themselves using their own or other certified laboratories. State environmental monitoring is organised by the State

Committee for Environmental Protection, which mainly uses the State Hydrometeorology Committee for actual monitoring.

Monitoring of land is executed by the Department of Land Resources with the participation of the State Committee for Environmental Protection, the Ministry of Agriculture, and other governmental bodies. According to the law, land may only be used for the purposes for which it was assigned, regardless of the form of ownership. The authorised uses are identified in the documents confirming the right of property. Inspections are executed by the local agents of environmental control (state inspectors or a specially created commission). Their agents send a preliminary notification to the owner of the land to be inspected, but can also carry out unannounced inspections on the basis of information received from third-party sources.

The general responsibilities of the State environmental control officials include the following:

- to visit facilities and organisations regardless of the type of property, including military installations;
- to check the functioning of pollution control equipment, and to determine if they comply with the law;
- to issue permits for waste output, related to the disposal of solid and other waste;
- to determine the standards for waste and toxic pollution emissions in coordination with the departments responsible of sanitary and epidemiological control;
- to determine the necessity for organising the State Expertise and to control the implementation of the resolutions formulated by the Expertise;
- to require the elimination of any observed defects in the planning and functioning of pollution control equipment;
- to arrest those guilty of infringement of environmental protection regulations and to institute administrative and criminal proceedings against persons and companies; and
- to make decisions to limit, suspend, or to halt the functioning of any industrial activity causing damage to the environment.

These decisions are obligatory for all ministries, organisations, companies, officials and citizens. The state environment inspector is empowered to do the following:

- issue a directive, following a predetermined form in which he or she can prescribe several measures to be taken by the industrial agent to ensure their activities comply with the environmental law (such directives must have a warning that in cases where the industrial agent does not take adequate measures, the materials will be sent to the administrative commission for punishment to be applied);
- to issue a Protocol (a record of proceedings) reflecting an infringement to the environmental law or other environmental norms and to send it directly to the administrative commission for punishment to be applied;
- render a decision (make an enactment) for a punishment application on persons guilty of violating environmental regulations;
- issue a command for the industrial agent to halt all exploitation of a site until the infringements to the environmental regulations are corrected (such a command should have a warning to send notification to the bank to suspend all financial operations of the industrial agent in question.);
- send to the bank servicing the industrial agent, a command (using a special form) to stop the financial operations on the account of the industrial agent in question.

1.4.1 Environmental Fees

Environmental fees can be assessed for:

- the use of natural resources;
- the use of the natural resources beyond the authorised limits or for "irrational" use of natural resources; and
- emissions of environmental pollution.

Land use fees are determined by the Code for Lands, 1984, and in the Law on Payments for the use of Natural Resources, Norms of Payments for Environmental Contamination, March 3, 1992.

Fees are also prescribed by the "Code for Water", 1984, in the form of:

- water resource use fees;
- fees for reconstruction and protection of water resources which include payments for:
  - ◊ water abstraction within the allowed limits;
  - ◊ water abstraction in amounts exceeding the allowed limits;
  - ◊ wastewater discharges to bodies of water within the allowed limits;
  - ◊ wastewater discharges to bodies of water in quantities exceeding the allowed limits; and
  - ◊ wastewater discharges containing pollutants in quantities exceeding the allowed limits.

A charge for issuing a licence for using a body of water is collected in the amount determined by the respective state environmental control administration.

The fee levels for using natural resources are determined in accordance with the procedure for PDV/PDS identification for each industrial/commercial agent. The fees for using natural resources are calculated on the basis of individually determined standards. Initially the fees were introduced by the Soviet Government Decree No. 32 of 1 January 1988.Based on this Decree the Ministry of Environmental Protection has developed and approved two basic forms of fees for using natural resources:

- Fees for waste disposal and for other forms of harmful impacts on the environment within allowed standards (PDK). This fee is calculated by multiplying the rates (per measurement unit of pollutant) by the quantity of the pollutant. The results for each pollutant are tallied.

- Fees for waste output and for other forms of harmful impact on environment within the allowed limits (PDV/PDS). This fee is calculated by multiplying the basic rates per pollutant by the difference between the standards and the limits per pollutant. The results for each pollutant are tallied. In cases where the facility exceeds the waste output limits, the fee calculation will be done by multiplying the rates foreseen for the limits by the amount of actual excess waste output. The results for each pollutant are tallied and the sum is multiplied by five. In cases where a facility does not have a properly formulated permit for waste output, the entire output of waste is considered to exceed the limits and is to be paid in accordance with the procedure for the limit rate waste output.

1.5 Health and Safety Administrations and Agencies

The State Sanitary and Epidemiological Service is the main controlling body on occupational health and safety issues. The official bodies and institutions of the State Sanitary and Epidemiological Service represent the unified system, headed by the State Committee of Sanitary and Epidemiological Control. The State Sanitary and Epidemiological Service consists of the following organisations:

- State Committee for Sanitary and Epidemiological Control of Azerbaijan;
- Centres for Sanitary and Epidemiological Control in the regions and cities;
- Scientific Institutes for local of sanitary and epidemiological control;
- Educational Institutes and Colleges responsible for training specialists in the field of sanitary and epidemiological control.

Together with state technical inspection and representatives from trade unions, sanitary-epidemiological inspections are responsible for issuing permits for construction and operation of buildings, construction sites and equipment. It is required that any project design or construction works comply with requirements of the occupational health legislation. These requirements include:

- rational use of the territory and production premises;
- adequate operation of the equipment and organisation of production (technological) processes, protection of workers against harmful and dangerous production factors;
- compliance with sanitary and hygienic norms and regulations regarding working facilities and places; and
- establishment of sanitary facilities.

Legislation provides an economic incentive for enterprises to comply with the occupational safety standards. Tax rebates can be applied if an enterprise introduces or develops new (safer) technologies or production facilities, produce protective equipment (collective or personal) and control devices. On the contrary, if enterprise does not comply with safety legislation, fines or damage should be paid. An acceptance commission check in details the compliance of enterprise with occupational health and safety norms and regulations. All members of the acceptance commission (representatives of trade unions, technical inspections and sanitary-epidemic control) must sign inspection report and acceptance certificate for new and redeveloped facilities. All working facilities should have a safety certificate.

The Standardisation, Metrologic and Certification Committee (Gosstandard) deals with the certification of production equipment and protection.

Administration of the enterprise must ensure that all working places are equipped with adequately safe facilities and protection equipment is provided. Administration must ensure that all new raw materials and semi-finished products used for production purposes have passed special examination regarding their effect on human health.

The occupational health and safety standards in Azerbaijan consist of the following:

- the system of occupational safety standards (SSBT). The state standards (GOSTs) are approved by the Gosstandard and the State Architectural Committee
- the sanitary norms, standards and hygienic regulations which are approved by the State Sanitary and Epidemiological Control Committee and the Ministry of Health; and
- the safety rules (fire safety, radioactive safety, biological safety, technical safety) etc.

The Ministry co-ordinate the development of safety rules.

An enterprises must assign annually funds for occupational safety measures in accordance with collective agreements. These funds must be spent exclusively on the improvement of employees health and working conditions.

2 ENVIRONMENTAL REQUIREMENTS

2.1 Environmental Management Programme

The environmental legislation of Azerbaijan does not require companies to develop any special form of environmental management system, nor that any special personnel be hired for managing the environmental protection and pollution control equipment at production sites. However, compliance with all applicable standards, limits, and quotas prescribed by the environmental authorities is considered extremely important. It is common practice among larger companies to hire specialised environmental personnel, to equip their own laboratories for all required environmental testing and analyses, and to carry out their own laboratory certification.

Moreover, companies are required to maintain an environmental register for all aspects of inspections, maintenance and operations of their environmental protection and pollution control installations and equipment. In addition, annual reports must be prepared and presented on industrial waste, secondary waste generated by pollution control equipment, use of chemicals, actual emissions, and waste generation and disposal.

2.1.1 Regulatory obligations.

The main principals of environmental policy and legislation in Azerbaijan are stated in the Constitution. It stipulates that "the citizens have the right to live in a favourable environment, to have access to authentic sources of information on its actual condition and to be compensated in cases of detriment caused to health and to wealth by environmental infringement."

The framework of environmental policy and regulations of the Republic of Azerbaijan is established in the following legislative documents:

- Constitutional Act on Independence of Azerbaijan of October 1991;
- Constitution of the Azerbaijan Republic, 1995;
- Law on Environmental Protection, adopted in 1992;
- Statute of the State Committee for the Environment of September,1992;
- Payments for the use of natural resources, norms of payments for environmental contamination, March 1992;
- Land Code, 1984;
- Water Code, 1984;
- Law on Air protection, 1981;
- Regulations of the Sanitary and Epidemiological Service of the Azerbaijan Health Ministry.

Within the above framework, the State Committee on Standardisation (Gosstandard) issues state standards for air and water quality, noise and vibration, effluent quality and many others. The State Committee for the Environment develops guidance and procedures for application and utilisation of standards in particular areas of environmental protection.

2.1.2 Planning/Implementation of Environmental Programmes

The "Guidelines on Procedures for the EIA Process While Developing Feasibility Studies of Projects of National Economy" were adopted by the State Committee on Ecology of the USSR in 1990 with an expiry date of 1992. These Guidelines were provided as additional to instructions which already existed on compliance with nature protection legislation. It was planned to review and amend the Guidelines as more up-to-date legislation and instructions regarding the EIA Process were developed.

Implementation of the Guidelines was coincidental with the collapse of the USSR and they were never legally endorsed by the Government of Azerbaijan. However, in the absence of any alternative guidance, the Azerbaijan State Committee for the Environment still applies these same principles, together with relevant clauses of the Law on Environmental Protection, to the current EIA Process.

In accordance with the Guidelines, enterprises are required to develop an environmental management plan at the very earliest stage of planning activity. The Environmental management plan and appropriate mitigation measures must be included in the planning application submitted to the local branch of the State Committee for the Environment for approval.

All documentation should state the relations between state authorities and developer, specify the responsibilities and liabilities of both parties and determine the intended environmental protection measures as well as the economic and social impact on the region. The environmental part of the documentation should include an environmental assessment of the proposed area and the following documentation:

- type and amount of natural resources to be utilised;
- type and amount of pollutants to be generated, including wastes;
- physical impacts; and
- noise, radiation, heat and other impacts.

The technical part of the documentation should include:

- information on technical and technological processes;
- information regarding materials used for production and characteristics of the final product, which include:
    - ◊ physical and chemical characteristics of the materials;
    - ◊ characteristics of biodegradability of materials in the natural environment;
    - ◊ list of environmental impacts;
    - ◊ assessment of the impact on the abiotic components of the environment (changes of chemical characteristics of air, physical-chemical characteristics of soils;
    - ◊ sanitary and hygienic assessment of the materials;
    - ◊ information on materials utilisation, storage, transportation and disposal;
    - ◊ measurements to provide environmental safety for utilisation, storage and transportation of the materials;
    - ◊ reuse, recycling and disposal methods for materials; and
    - ◊ specific measures to provide safe disposal of the materials.

The Guidelines state that prior to any economic activity or development being undertaken it is necessary to accomplish the assessment of potential impacts of the proposed activity on the environment. It lists more than 30 activities for which a full EIA is obligatory. Among them are:

- production of asbestos containing materials;
- chemical industry;
- paper production;
- highways and railways construction;
- construction of airports;
- wastewater treatment plants; and
- large water intakes.

It is also a requirement that the following information is included in the planning documentation:

- purpose of the development or proposed activity;
- alternatives;
- state of the environment in proposed area;
- potential negative impacts;

- mitigation measures; and
- monitoring and environmental management plan.

2.1.3 Environmental Personnel

Environmental legislation of the Azerbaijan Republic does not require companies to develop any special form of environmental management system, nor that any special personnel be hired for managing the environmental protection and pollution control equipment at production sites. There are no specific requirements to appoint a site compliance officer. However, compliance with all applicable standards, limits, and quotas prescribed by the environmental authorities is considered extremely important. It is common practice among larger companies to hire specialised environmental personnel, to equip their own laboratories for all required environmental testing and analyses, and to carry out their own laboratory certification. The Law on Environmental Protection, 1992, states that enterprises, institutions, organisations and citizens must maintain the established environmental quality standards by keeping to the approved technologies, by implementing ecologically safe technologies and production processes, reliable and effective operation of treatment works, facilities and means of control, treatment and utilisation of wastes, by accomplishing environmental activities and programmes to ensure the protection of lands, sub-soils, waters, forests and vegetation, animals, and reproduction of natural resources.

2.1.4 Environmental Record Keeping

Companies are required to maintain an environmental register for all aspects of inspections, maintenance and operations of their environmental protection and pollution control installations and equipment. In addition, annual reports must be prepared and presented on industrial waste, secondary waste generated by pollution control equipment, use of chemicals, actual emissions, and waste generation and disposal.

Other requirements regarding environmental records of air emissions, wastewater discharges, water use and waste disposal are presented in the relevant sections of this report.

2.2 Air Quality

2.2.1 Air Quality Regulations and Requirements

The Law on Air Protection, 1984, contains general provisions for air protection and regulation of impacts on air quality in the process of economic and social development. It defines the general obligations to protect air against pollution by industries, transport, energy production and other sources, establishes a system of environmental standards and permits and contains measures to control acid rain, trans-frontier pollution, climate change and depletion of the ozone layer.

Air quality standards are introduced by federal health protection and environmental protection agencies. Air quality standards are established for each type of air pollutant and physical effects (radioactive, electromagnetic, sound, etc.) separately measured in milligrams per cubic metre of air, both for total maximum concentration and daily average concentrations. These standards are established separately for work place and stack emissions.

2.2.2 Inventory of Air Emission Sources

The Law defines two sources of pollution: mobile and stationary. Standards for maximum permissible levels of emissions are established for each individual type of stationary source and each mode of transport.

Maximum allowable concentrations (MAC) have been developed for 479 air pollutants. MACs play the role of a limiting factor while at the same time serving as a basis for the calculation of maximum allowable emissions. These are determined by considering the background level of pollution and the existing level of industrial impact on the environment in a given territory.

There are three main levels in determining the harmful impact of a pollutant:

- maximum instant impact and the corresponding concentration;
- maximum daily impact and the corresponding concentration; and
- in the absence of the previous two basic parameters (certain pollutants do not have any officially prescribed parameters) there exists an "provisional level of safe concentration." Where certain official parameters of MAC do not exist, the concerned company must calculate it on its own and present the data for approval to the Sanitary and Epidemiological Control administrations, which consider it in co-ordination with the State Committee for Environmental Protection. These two authorities then take a mutually agreed decision.

This is a rather long process, the cost of which is borne by the company concerned. Thus, it is strongly recommended that the company begin the process as early as possible, particularly if the emissions are expected to contain any rare pollutant.

The ventilation, heating, and air conditioning in new buildings are to be designed and installed in accordance with the Construction Norms and Rules No.2.04.05.-86 approved by Decision No. 49 of 15 December 1986 of the USSR State Committee for Construction (still in force).

2.2.3 Air Emission/Stack Plan

An emission standard is a limitation per unit of time on the maximum quantity of a pollutant that may be released into the air by a particular source. Emission standards are determined by the owner of the air emission source or its administrative entity according to the procedures described in *Limitations of Maximum Permissible Emissions and Physical Effects, 1981.* Emission standards should then be approved by the environmental or sanitary control agencies within their competence.

Maximum allowable concentrations and air emissions are to be calculated and agreed for:
- the workplace; and
- stack emissions.

Stack height plays an important role, as does the wind rose at the location of the facility, along with the background air quality of the region.

2.2.4 Air Emission Characteristics and Monitoring Plan

Emissions from the facility are to comply with the maximum allowed concentrations (MAC), as noted in the table below, although it should be noted that emission limits in Azerbaijan can be as much as one order of magnitude more restrictive than most other countries. As a result, in certain cases, the MAC may not even be measurable with current technologies and are practically never enforced. In most cases, it is necessary to work with the authorities to ensure permit conditions are reasonable for the level and type of pollutant emission anticipated.

Table 1: Maximum Allowed Concentrations (MAC) of Selected Pollutants in Facility Emissions (mg/m^3)

Pollutant	Class of Danger	MAC (punctual)	MAC (daily) (24 hours)	Approximate Level of Safe Concentration
Dioxide of Nitrogen	2	0,085	0,04	
Oxide of Nitrogen	3	0,4	0,6	
Nitrogen three-fluoride	3	0,4	0,2	
Acrilonitrile	2		0,03	
Caprolactam	3	0,6	0,6	
Sulphur Dioxide	3	0,5	0,05	
Aniline	2	0,05	0,03	
Acetone	4	0,35	0,35	
Barium carbonate			0,004	
Barium oxide	1			0,004
Vanadium 5-oxide	1		0,002	
Particulates	3	0,5	0,15	
Vinyl acetate	3	0,15	0,15	
Bismuth oxide	3		0,05	
Hydrogen cyanide	2		0,01	
Gexan	4	60,0		
Asbestos containing dust	1		0,06	
Vinylplast dust				0,01
Natural zeolite dust				0,02
Paper dust				0,1
Wooden dust				0,1
Brass dust (by Cu)				0,003
Paraffin dust				0,6
Cement dust	3	0,3	0,3	
Dolomite dust	3	0,5	0,15	
Polypropylene dust				0,1
Phenolformaldehyde resin dust				0,05
Mercury metallic and its oxides	1		0,0003	

In addition to air emission regulations, the Azerbaijan Republic has developed some requirements regarding air quality in buildings and at the working places. These requirement are specified in GOST 12.1.005-76 *Temperature, Moisture and Content of Pollutants in the Air of Working Zones.*

2.2.5 Emissions Reductions

The Law on Air Protection states that all enterprises should implement measures to reduce their emissions. Measures to protect air must not cause the pollution of soils, surface and underground waters and the general environment. According to the Law on Air Protection enterprises are required to reduce their air emissions in cases of unfavourable meteorological conditions. Operations may be limited, stopped or prohibited if they exceed permissible level or threatens public health.

2.2.6 Record keeping

According to the Law on Air Protection, 1984, enterprises are required to keep records of their emissions including type, composition and amount of pollutant.

2.3 Emergency Preparedness and Response

There is no information available about Emergency Preparedness and Response for Azerbaijan. For the Russian Federation the regulations are the following.

Chapter VIII of the Law on Environmental Protection concentrates on the handling of extraordinary environmental incidents and disasters, particularly in Articles 58 and 59 (see Annex 1). The Law applies primarily to large-scale environmental disasters on a regional and national levels (for emergency classification see below), and introduces the notion of a "zone of extraordinary environmental situation" which can be declared by the President of Russia in the form of a Decree which is requested and prepared by the local environmental protection authorities. All activities having a negative impact on the environment can be suspended in such zones until the required remedial measures are taken. The law also specifies that the financing of such an environmental measure is to be provided by the responsible parties (companies, ministries) as well as funds from specific Federal environmental programmes.

The Law of the Russian Federation On Protection of Population and Territory from Emergency Situations of Environmental and Technological Nature, December 21, 1994, №68-F3, which was signed by the President on 21 December 1994, also addresses the responsibility of industrial entities for environmental disasters. According to the law, companies must promptly inform the environmental protection authorities of the current and of any potential extraordinary environmental situations that could arise at their facilities. They must also make provisions for the necessary financial and material resources required to deal with the consequences of an environmental disaster. The Federal government issued Decree No. 1113 "On unified state system of extraordinary situations prevention and the consequences elimination" on 5 November 1995, according to which industrial operators must be prepared to inform the Ministry of Civil Protection and Extraordinary Situations of any environmental disasters that occur at their facilities.

In accordance with the above mentioned Law a classification of emergency situations was approved by the Government of the Russian Federation on 13 September 1996. It classifies emergency situations as on-site, local, territorial, regional, national and transboundary. Emergency can be qualified as an "on-site emergency" if less then 10 people were injured or living conditions of less then 100 people were effected or if damage is less then 1000 "minimum wages" (special term introduced in Russia for social security) or if the impacted area does not exceed the area of enterprise. An on-site emergency situation should be eliminated by the enterprise and at its own expenses.

The co-ordination of disaster prevention is to be done in compliance with Federal Government Decree No.164 "On inter-ministerial Commission for extraordinary situation prevention and consequences elimination" of 20 February 1995. The Minister of Civil Protection and Extraordinary Situations is appointed as head of this Commission. Industrial operators must maintain direct contact with the Ministry in the event that they conduct hazardous production processes. They must also maintain direct informative contact with the Ministry of Health's Department of Sanitary and Epidemiological Control, which is empowered to enforce compliance by any industrial activity with the requirements of the Federal law "On sanitary and epidemic well-being of the population" initially dated 19 April 1991 and incorporated into Federal law No. 89 of 19 June 1995, which came into force on 22 June 1995.

Official Letter No. 01-11/29-2618 of the former Ministry of Environmental Protection, registered in the Ministry of Justice on 11 September 1995, obliges industrial operators to maintain direct informative contact with the Goscomecology. The same requirements to inform the environmental protection authorities of any environmental incident or disaster immediately (on the same day of the incident) by telephone were reconfirmed by Order No. 29 of 23 June 1996 of the same Ministry.

In addition to the above-mentioned regulations, there are fire safety regulations and flood safety regulations.

According to the *Fire Safety Regulations* PPB-01-93 for the Russian Federation, in force from 1 January 1994, every enterprise must comply with the requirements set in the standards, construction norms and regulations, norms for technological design, regional norms and requirements for specific industries; develop an evacuation plan and provide necessary equipment for emergency situations; undertake regular fire preventive measures and train staff. Enterprises are required to undertake periodical fire-alarm training (according to the requirements of the local Fire Safety Service).

Flood safety is regulated by Order No 353 of 26 March 1998 on *Flood Safety on the Territory of the Russian Federation in 1998*. This document states requirements and preventive measures for floods in 1998.

2.4 Hazardous Materials

2.4.1 Inventory of Hazardous Materials

Requirements for Azerbaijan have not been identified. For the Russian Federation the regulations are the following.

- According to the Decree of the Government No869 of 12 November 1992 on State Registration of Potentially Dangerous Chemicals and Biological Substances all potentially dangerous chemical and biological substances should be registered with the Russian Register in order to prevent their adverse effect on the environment and public health. All individual chemical and biological substances (compounds), manufactured and/or applied on the territory of the Russian Federation should be state registered. Substances, designed for production or use after 31 March, 1993, the so called "new substances" should be registered before their production or use. Substances, produced or imported to the Russian Federation before 31 March, 1993, "old substances", should be registered within three years from the publication of the document (25 May 1993).

2.4.2 Hazardous Materials Storage Area Design

These requirements were developed during Soviet Union so they are likely to be still applicable in Azerbaijan.

The open storage area for hazardous materials should be enclosed by a fence of not less than 2 meters high and embanked. The size of the embankment is regulated by the construction norms related to the specific production and type of the hazardous materials. Within the embankment, the storage area must be carefully designed and covered with gravel. The storage area should be elevated above ground for 0.2 m and surrounded by a ditch to collect storm water run off.

The storehouse for inflammable materials must not have more than one floor. Windows in storehouses for gaseous materials should be painted or covered with protection against sun and heat. The storehouse must be naturally ventilated.

Liquid hazardous materials such as oil and diesel can be stored underground in specially designed containers covered by 2m of earth.

2.4.3 Transfer and Handling of Hazardous Materials

According to the Fire Safety Regulations, the following requirements are applicable to the transportation of hazardous and flammable materials:

- all containers must be marked according to the toxicity of transported materials and accompanied with documentation specifying the type of transported materials, amount and final destination;
- hazardous materials should be packed in containers or other packaging material in accordance with the requirements of state standards and the type of material. Packaging material and containers must be firm, in good order, prevent spillage and provide safe transportation of the materials;
- flammable materials must be supplied with fire-extinguishing equipment, placed in a hermetically sealed packaging or containers;
- glass containers should be placed in firm wooden or plastic boxes with fire-resistant and absorbent filling;
- metal and plastic containers should be placed in wooden boxes;
- solid, dry substances should be transported in small lots, solid substances which are packed in sacks must be additionally packed in a hard cover (metal or plywood drums);
- loading-unloading areas should be equipped with special facilities (stretchers, ladders, and so on) to provide a safe working environment. Hand-cart or special stretchers with sockets must be provided for glass containers, or otherwise they can be carried by two people in a basket with handles. Workers should be provided with personal safety clothing. Loading and unloading should be carried out in accordance with warning signs and instructions; and
- filling and draining of containers must be carried out through pipes and hoses.

2.5 Environmental Due Diligence

Prior to undertaking any economic activity or redevelopment, it is necessary to submit specific documentation to the state environmental Expertise (see section 2.1.2 above). This documentation should contain a feasibility study for the proposed activity or redevelopment and an environmental impact assessment.

2.5.1 Soil and Groundwater Contamination

Protection of the land in Azerbaijan is based on the "Code of Land", adopted in 1984. Groundwater is regulated by the "Water Code", adopted in 1984. Soil contamination levels are calculated on the basis of the "List of maximum allowable concentration of basic toxic matter in the soil," Sanitary standards and Regulation No. 6229-91, Ministry of Health of the USSR, 1991. The following is selection of standards:

Table 2: Soil and Groundwater Maximum Allowable Contamination Levels

No.	Pollutant	Maximum allowable concentrations (µg/kg)
1	Acetaldehyde	10.0
2	Bensapiren	0.02
3	Benzene	0.1
4	Benzol	0.3
5	Vanadium	150.0
6	Isopropylbensol	0.5
7	Arsenic	2.0
8	Nitrates	130.0
9	DDT (sum)	0.1
10	Mercury	2.1
11	Pb + Me	20.0
12	S (elementary)	160.0
13	H_2SO_4	160.0
14	Furfurol	3.0
15	Cobalt (mobile)	5.0
16	Cu (mobile)	3.0
17	Ni (mobile)	4.0
18	Pb (mobile)	6.0
19	Zn (mobile)	23.0
20	Cr (mobile)	6.0

The *Law on Environmental Protection*, 1992, states the main principles of environmental liability. Enterprises, organisations and individuals are liable to pay the injured party for all damage to the environment and/or to health and for any loss of property in accordance with existing legislation. Compensation for the damage could be made voluntarily or following a court order. The amount of compensation should be calculated in accordance with guidance and methods developed by the responsible bodies or, in the absence of specific methods, should be equal to the real cost of the environmental clean-up, including damage to property and benefit losses. Compensation can be paid directly to the aggrieved party or to the state environmental funds if the damaged object is common property. If several persons inflict the loss, the charge should be calculated according to individual contributions. This includes research and design institutions and construction companies.

The GOST 17.4.2.01-81 *"Soils. Indicators of sanitary state"* provides a matrix of various types of contamination and the zones or locations in which they would require investigation.

The enforcement of environmental regulations and requirements lies with the local administrative authorities and local state environmental committees and bodies. The existing legislation does not specify particular environmental liability for the cases when environmental damage has been caused by a previous owner of the site.

2.6 Hazardous Waste

2.6.1 Hazardous \Waste Regulations and Requirements

The Law on *Environmental Protection*, 1992, establishes a number of stringent requirements concerning safe handling of industrial wastes, and methods for their collection, disposal and utilisation. For example, it is prohibited to dispose of toxic wastes on sites in the vicinity of cities or other settlements or natural recreational or specially protected areas. It is envisaged that environmental protection and sanitary control agencies are double checking the dangerous waste management practices.

There is no available information on waste management in Azerbaijan. Here are the requirements for the Russian Federation.

The Federal Act on *Industrial and Domestic Wastes* establishes the legal responsibilities for all enterprises and persons who generate or handle domestic and industrial wastes. The Federal Act sets out requirements regarding the handling and transportation of hazardous wastes. All hazardous waste must be properly classified on the basis of its composition and characteristics, registered and labelled on site and then handed to the specially trained operators who possess the required state licence.

2.6.2 Inventory of Hazardous Wastes

The Order of Goskomecology on *Federal Waste Specification* provides classification system for all types of wastes. The catalogue has five classification levels: blocks, groups, subgroups, positions and sub-positions. The highest level of classification is blocks, formed according to the origin of waste: organic (animal and green waste), mineral waste, chemical waste and domestic (including household) waste.

All hazardous wastes are classified into four categories according to the degree of toxicity:

(I) extremely hazardous;
(II) highly hazardous;
(III) moderately hazardous and
(IV) least hazardous.

The enterprise should present to the local branch of the Goscomecology with two copies of a form recording their wastes in the Waste Catalogue. This includes information about every particular type of waste, including:

- origin of waste;
- aggregative state;
- chemistry of waste (percentage of all compounds) and methods of determination;
- toxicity of waste.

It is required to update those records once in three years.

The Instruction for the Determination of the Toxicity Index for Industrial Wastes, published by the Ministry of Health in 1987, provides methods to determine the toxicity index according to the maximum permissible level of pollutants in industrial wastes.

2.6.3 Landfill Sites

Under Order No 3133/84 on *Handling, transportation, treatment and burying of industrial toxic waste*, approved by Head Sanitary Epidemiological Doctor of the former USSR and Regulation No 2.01.28/85 on *Construction norms and regulations,* approved by Gosstroj, waste disposal facilities are classified as following:

- facilities for household and construction waste;
- facilities for the treatment and landfilling of industrial waste;
- radioactive waste facilities.

According to Regulation No 2.01.28/85, waste disposal facilities are intended to centralise the collection, treatment and disposal of toxic waste from enterprises and companies. Chapter 4 of the Regulation covers sanitary instructions for the disposal facilities:

- Disposal facilities must be situated in the areas that are remote from residential areas
- The sanitary zone must be 3000 meters;
- The site must be bordered by a ring canal, etc.; and
- The facility will be comprised of: a plant for treating the toxic waste, a landfill, a garage for waste transport equipment.

Only toxic waste of the first, second and third categories according to the degree of toxicity would be accepted for disposal at such facilities. Radioactive waste and oil products are not acceptable for disposal in these facilities. The waste falling in the fourth category must be brought to household waste dumps.

2.6.4 Hazardous Waste Storage Practices

All industrial wastes produced by an enterprise should be packed according to their toxicity index: steel containers for first category; polyethylene bags for the second category and paper bags for the third category of waste. After packing, the wastes should be weighed, recorded and delivered to the storage sites for further transportation to the landfill sites. Fourth category wastes are piled up at storage sites.

2.6.5 Transportation and Disposal of Hazardous Waste

Hazardous wastes should:

- be transported in specially equipped and properly marked vehicles;
- have a hazardous waste passport stating the composition and properties of the waste. The passports should be signed by an authorised person from the enterprise and should always be available for inspection when wastes are transported;
- be accompanied by documents stating the amount of hazardous waste, reason and final destination of transportation.

Industrial waste, depending on toxicity and other properties, are disposed of either at the ordinary dumps or toxic waste landfill sites. The method of disposal chosen is dependent on the aggregate state, solubility coefficient, toxicity index and other special characteristics of the substance.

Ordinary landfill sites receive category II-IV wastes. The total volume permitted varies for each region depending on its natural capacity to assimilate and neutralise pollutants without causing harmful effects to the environment and public health. In order to reduce adverse effects on the environment the limits for waste generation and waste disposal are set by the Cabinet of Ministers of Azerbaijan in Payments for the use of Natural Resources, Norms of Payments for environmental Contamination of 3 March 1992.

2.6.6 Record Keeping

All enterprises or legal persons producing or handling wastes should keep records of wastes generated, reused, treated, transferred to or received from different organisations, and disposed of. All records should be kept for a certain period of time (to be set by the local authorities) and be available to present upon request of the competent authorities. All waste shipments must be accompanied by a "passport" containing information outlined in section 3.6.5 above.

2.7 Aboveground Storage Tanks

Specific requirements for above-ground storage tanks (ASTs) include the following:

- the storage area should be surrounded by fence at least 2 m high, embanked, elevated to at least 0.2 m above ground level and surrounded by ditch for storm water run off;
- it is strictly forbidden to use unsealed containers and locks, containers with warps and cracks, faulty equipment, control instruments, input pipes and stationary fire safety equipment; to have trees and bushes within the storage area; to place tanks on a flammable base; overload tanks; to pour products in or out during storms;
- spillage has to be cleaned immediately;
- on one embanked area there must not be more than four tanks within an area of 25x15m; distance between tanks must be not less than 10 m and distance to the embankment not less than 5 m. The distance to the next embanked storage area must be not less than 20m.

2.8 Waste Water

2.8.1 Wastewater Regulations and Requirements

The Water Code states that the discharge of waste waters (industrial, municipal, drainage and other) may be conducted only when:

- a permit is issued by the Agency for Use and Protection of Water Resources upon approval from environmental protection, sanitary and other related agencies;
- the discharges do not increase pollutant concentrations in water above the environmental quality standards.

When waste waters are discharged into water bodies classified for domestic and municipal use, the water quality standards must be observed at a distance of one kilometre upstream of the nearest point of water use. When waste waters are discharged into fishery water bodies, the standards must be respected at distance not more than 500m from the discharge point or the source of pollution.

Discharge limit values for pollutants are established individually for each enterprise or other source of pollution for the purpose of regulating the disposal of effluents into surface water bodies, ground water and onto land.

The Cabinet of Ministers of Azerbaijan decreed Payments for the use of Natural Resources, Norms of Payments for environmental Contamination on 3 March 1992.

The Payments prescribe the maximum permissible concentrations of pollutants for effluents discharged into water bodies, both on a permanent and temporary basis, with methods for establishing scientifically-based standards for effluents. Such standards are the basis for

granting discharge permits. All water-using enterprises must have discharge permits related to maximum permissible discharges (MPD), maximum permissible concentrations (MPC), or for temporarily agreed discharges (TAD).

Discharge Limitations

The quality of waste water discharges to surface water (after pre-treatment) is determined by the "Regulations on Water Protection: Standard Rules" adopted by Official Letter No. 5/15-12 of 26 January 1991 by State Committee for Environmental Protection of USSR, and which came into force from 1 March 1991. The main requirements for the quality wastewater discharged to surface water are as follows:

Table 3: Requirements for wastewater discharge

Pollutant or Parameter	Drinking Water Sources	Water for General Household Use	Fish aquatoria	
			"extra" and "first class" fish	"second class" fish
Suspended Solids	0,25 mg/l	0,75 mg/l	0,25 mg/l	0,75 mg/l
Floating matter	no floating matter should be visible on the surface of water			
Colour	no colour should be visible in a test-glass containing:			
	20 cm	10 cm	no colour at all	
Odour	max 1 ball directly or after chlorination	max 1 ball directly	no odour should be given to the meat or to the fish	
Temperature (°C)	max + 3° C above the average of the hottest month of the year		max + 5° C above the seasonal average	
pH	should not exceed 6,5-8,5			
Dissolved Oxygen	min 4 mg/l		6 mg/l in all seasons	4-6 mg/l by season
BOD compl.	3 mg/l	6 mg/l	3 mg/l	3 mg/l
COD	15 mg/l	30 mg/l	depends	
Chemical agents	within the maximum allowable concentrations (MAC)			
Lactosa positive bacilla	max 10.000 per litre	max 5.000 per litre	not regulated	
Colifagues	100 per l	100 per l		

The standards for waste water to be accepted by the municipal wastewater treatment facilities can depend on the regions where the waste is produced, but normally must meet the following standards:

Table 4: Standards for Wastewater Discharged to Sewerage Systems

No.	Pollutants	Allowable Concentration Limits (mg/l)	Sample Regional Allowable Concentrations (mg/l)
1	Suspended Solids	200	400
2	BOD complete	1000	1000
3	Fatty matter	60	50
4	Nitrogen (ammonia)	18	18
5	Chloride	1000	1000
6	Sulphate	500	500
7	Oil products	0,3	0,3
8	Anionic surfactants	1.0	1.0
9	Fe	0,5	0,5
10	Phosphorus of phosphate	2,7	2,7
11	Phenols	0,04	0,0-0,05
12	Cu	0,04	0,04
13	Ni	0,03	0,04
14	Zn	0,03	0,04
15	Cr -3	0,6	0,8
16	Cr -6	0,2	0,2
17	Pb	0,5	0,5
18	Al	0,2	0,0
19	Manganese	0,03	0,0
20	Formaldehyde	0,9	0,0-1,2
21	Fluoride	1,4	0,0-1,1

Quality limits for stormwater discharges (direct output) are as follows:

Table 5: Stormwater Discharge Limitations

No.	Pollutant	Allowable Concentration Limits (mg/l)	Sample Regional Allowable Concentrations (mg/l)
1	Suspended Solids	3-22	7,5-110
2	BOD complete	3,0	3,0-20
	COD	30	30-80
3	Mercury	0,0001	0,0
4	Nitrogen (ammonia)	0,4	0,0-0,5
5	Chloride	300	300
6	Sulphate	100	100
7	Oil products	0,05	0,05-0,5
8	Anionic Surfactants	0,5	0,0-0,05
9	Fe	0,1	0,1
10	Phosphorus of phosphate	0,2	0,0-0,2
11	Phenols	0,01	0,0
12	Cu	0,001	0,002
13	Ni	0,01	0,0
14	Zn	0,01	0,02
15	Cr -3	0,07	0,0
16	Cr -6	0,02	0,0
17	Pb	0,1	0,35
18	Al	0,04	0,3
19	Manganese	0,01	0,01
20	Cadmium	0,005	0,002
21	Cobalt	0,2	0,0

The regional Committees for environmental protection are empowered to determine the quality of the water to be accepted into local systems or for further cleaning or for direct discharge to surface water. For example, in Saint Petersburg the system accepts water with the following characteristics:

- pH within 6,5 to 9,0;
- Max temperature = 40°C;
- Max correlation COD: BOD complete = 1,5
  or
- Max correlation COD: BOD-5 = 2,5* (* except for the basins with a separate system of collection of waste water)

Table 6: MAC Limits for Selected Substances in Surface Water

No.	Pollutant	Maximum allowable concentrations for surface water used for fish reproduction (MAC) (mg/l)
1	Acrilamid	0,35
2	Acrylic acid	0,0025
3	Alumina bichromate	0,05
4	Ammonia salts	2,9
5	Ammonia bichromate	0,05
6	Ammonia	0,05
7	Aniline	0,0001
8	Acetone	0,05
9	Vanadium	0,001
10	Volframate	0,0011
11	Gexan	0,5
12	Titanium dioxide	1,0
13	Fe +2	0,005
14	Fe	0,05
15	Isopropyl alcohol	0,01
16	Cadmium	0,005
17	Cobalt	0,005
18	Paint components	0,1
19	Manganese ions	0,01
20	Cuprum ions	0,001
21	Cuprum	0,005
22	Carbamide	37,3
23	Arsenic	0,001-0,005
24	oils	0,05
25	Nickel	0,01
26	Mercury	0,0001
27	Pb 2+	0,1
28	Pb x	0,01
29	Sulphur	10,0
30	Sulphate ion	3,5 gr/l
31	Formalin	0,1 mg/l
32	Furan	0,01
33	Phosphorus elementary	absent
34	Zinc	0,05
35	Zn 2+	0,01
36	Cyanide	0,05
36	Chloride	300,0

Discharge Fees

Discharge fees are set depending on the permit type. There are two basic fees:

- fees for the discharge of contaminants within the norms of MPD
- fees for the discharge of contaminants exceeding the MPD

The fees depend also on the environmental sensitivity of the region.

When effluents are discharged into municipal water treatment facilities, effluent limits are determined by agreement between the owner of a source of pollution and that of the treatment facility.

2.8.2 Inventory of Sources Generating Wastewater

According to the *Water Code* of Azerbaijan, any enterprise can be defined as source of pollution if it discharges wastewater or other pollutants to the surface or ground waters, decreases quality of water resources and has a negative effect on the condition of water body beds and banks.

2.8.3 Record Keeping

Enterprises must keep records of wastewater discharged to the communal sewerage systems and ensure that the quality of wastewater complies with the state requirements.

2.9 Water Supply

2.9.1 Water Supply Regulations and Requirements

The main principles of use and protection of water resources in Azerbaijan are stated in the *Water Code*, 1984. According to the Water Code, every organisation, enterprise or otherwise must obtain a license in order to be able to use water resources.

Enterprises consuming water resources are required to:

- undertake protection measures to ensure stable water quality;
- register all volumes of water intake, wastewater discharge and the amount of pollutants present in the effluent,
- provide easy access to the information for state bodies regulating surface water and ground water resources.

Enterprises which use water for production and abstract water directly from wells or surface water sources should follow the requirements for drinking water quality stated in the State Standard GOST 2874-82 *Drinking Water - hygienic requirements and quality control.*

2.10 Asbestos Management

There is no information available on requirements regarding asbestos management.

2.11 PCB Management

There is no information available on requirements regarding PCB management.

2.12 Solid Waste

2.12.1 Solid Waste Regulations and Requirements

The Law on *Environmental Protection* of the Republic of Azerbaijan, 1992, defines some general provisions concerning wastes. Local authorities, enterprises, institutions, organisations and individuals have to take effective measures to deactivate, process, utilise, store or dispose of industrial and domestic waste and comply with the existing ecological, sanitary and epidemiological standards and regulations. The Law establishes a permit procedure for handling waste. Environment agencies at the local level have rights to issue permits for collection, transportation, treatment and disposal of industrial, domestic and other wastes. The Law prohibits putting into operation any new or modified economic and technical project not equipped with the necessary devices for waste minimisation and re-use.

2.12.2 Inventory for Solid Wastes

Solid wastes could be classified as an industrial, domestic and agricultural, toxic and non-toxic. Toxic wastes are specified according to the degree of toxicity.

The enterprise should present to local branch of the Goscomecology application form for recording their wastes in the Waste Catalogue and information about every particular type of waste in two copies:

- origin of waste;
- aggregative state;
- chemistry of waste (percentage of all compounds) and methods of determination;
- toxicity of waste.

It is required to update those records once in three years. It is also required to maintain records about amount of wastes generated by enterprise and waste disposal site which received them.

2.12.3 Solid Waste Storage Practices

Solid wastes, which have not been utilised or transferred to landfill sites for treatment and disposal, require recording. Temporary storage of solid wastes on a company's site should be agreed with regional environmental protection committee.

2.12.4 Solid Waste Disposal Practices

Non-hazardous solid waste may be disposed of in ordinary landfill sites. The method of disposal is chosen depending on the aggregate state, solubility coefficient, toxicity index and other special characteristics of the substance.

2.12.5 Solid Waste Reduction/Reuse Efforts

As prevention and minimisation of industrial wastes during the production process are considered to be the most efficient way of solving problems, the legislation therefore concentrates on preventive measures, including introduction of resource-saving, low-waste and non-waste technologies. The preventive measures are established by respective legislative acts.

The *Law on Environmental Protection* prescribes that waste minimisation and other modern technologies to prevent pollution of the environment shall be considered and envisaged during preparation of project feasibility studies. This Law does not allow operation of economic and technical projects not equipped with modern technologies, structures and devices to ensure

the disposal, treatment and utilisation of harmful wastes, emission and discharges, complying or not with the maximum permissible

Table 1. Azerbaijan Railways (ADDY): Example Framework for Environmental Management Plan

Subject: Institutional/Organisation Issues

EMP Issue	Action	Individual(s) Responsible for Action	Target Date	Budget/ Resource implications / Other comments
1. **Setting up the EMP**	Define job descriptions for and appoint staff to positions of: a) Corporate EHS manager b) Assistant EHS managers	DG/personnel		Salaries and overheads and support staff
	Draft and agree environmental policy	cEHS manager		as above
	Modify and expand draft framework management plan	a EHS managers		as above
	Develop reporting structure for EMP - which links EHS team into operational and administrative activities	cEHS manager and assistants		as above
	Undertake an environmental training needs assessment to identify key staff in terms of roles/influence and training needs	cEHS manager and assistants		as above
	Produce draft environment risk maps centrally with information available - these can form a basis for more detailed information generated by audits of specific areas/facilities.	EHS assistants		The Environmental Risk Maps should indicate the location of sensitive areas, receptors, rivers , aquifers protected areas, wetlands etc, the location of past spillages/incidents, locations of activities which could present a risk such as oil storage, handling facilities stopping places maintenance yards etc. This will need to be built up and added to over time as information is obtained from the audits . These maps will assist in determining priority areas for action and help plan responses to future incidents.
	Set up an audit programme covering all property and facilities and track	cEHS manager and assistants		An approximate budget can be assigned - likely to be most efficient to go to competitive tender, but require as part of Terms of Reference that railway staff are involved and trained as part of the audit process
	Set up database for legislation together with procedures for updating periodically - make this available to regions/facilities	cEHS manager and computer/IT department		Time to set up database and periodically to collect and input updates and make it available electronically or paper copy to all EHS managers Use legislative review in Volume II as a starting point
	Develop environmental objectives and targets which can be used to assess performance - refering to the corporate environmental policy, the audit results and analysis of compliance status	cEHS manager and assistants		These could include • obtaining 'ecological passports' for a specified number of facilities by a certain date • reducing the number of incidents each year • cleaning up specified areas of contaminated ground
	Compile environmental action plan and prioritise actions based on work needed to meet objectives and targets	DG/cEHS manager		Refer to Environmental risk plan, consultations with authorities, compliance analysis and business plan in drawing up priorities
	Develop corporate directives on key environmental management issues;	cEHS manager supported by		Many of these issues are closely related to reducing costs and improving efficiency of the railway operation as a whole. They

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Subject: Institutional/Organisation Issues

EMP Issue	Action	Individual(s) Responsible for Action	Target Date	Budget/ Resource implications / Other comments
	oil spill prevention emergency response waste management energy efficiency	consultants		could provide significant savings in the long term. If consultants are commissioned to write these directives ensure that the EHS is closely involved and directs the output so that they address the particular management structure and operational activities of the railway.
2. Developing an EMS to implement the EMP on a day to day basis throughout the organisation	Develop simple operational procedures/guidance for staff undertaking or responsible for key tasks related to implementation of EMP. For instance these might be aimed at : • staff supervising loading and unloading activities • maintenance staff • construction staff	EHS assistants/ technical staff		All staff should be aware of their specific responsibilities with respect to environmental protection and should be reminded of these responsibilities through signs and brief guidance documents.
	Develop an overall programme for audit , review and modification of EMP and the environmental management system as a whole for the business plan period - 5 years	c EHS manager		
	Set up liaison meetings with authorities • on emergency response -preparedness and co-odination/communication • operational management issues relating to environment	c EHS manager		
	Develop a training programme for operational and administrative staff to implement EMS	c EHS manager supported by outside consultants		Train key staff to train others and training material to be customised to particular needs of staff

Table 1. Azerbaijan Railways (ADDY): Example Framework for Environmental Management Plan

Subject: Environmental Issues (examples)

Issue	Site Location	Action	Individual(s) Responsible for Action	Target Date	Budget/resource implications/ Other comments
Contaminated Material	Entire track Alignment Especially also Areas near spillage incidents Stopping points Maintenance and sidings facilities Chemical/oil and waste storage areas Asbestos or PCB containing material/equipment	**Identifying Potential Contaminated Material** Identify locations likely to be contaminated and types of contaminants likely to be present , This should be undertaken before sites works are undertaken. If an audit has been carried out for the area -this should provide the relevant information **Handling Material** Ensure that all on-site contractors handling contaminated material: • receive appropriate health and safety training; • aware of potential hazards associated with the exposure to contaminated land; • maintain appropriate personal hygiene practices following handling (e.g. no eating, smoking or drinking on site; washing prior to leaving site); • employ appropriate Personal Protective Equipment (e.g. disposable nitrile gloves, safety boots and overalls); and • aware of first aid procedures. Ensure that guidelines in the relevant method statement(s) are observed and that required risk assessments have been duly completed in accordance with statutory requirements. Documentation from these assessments should be available on site at all times. **Disposal of material** Material identified as contaminated should be stored and disposed of in such a way that it does not cause pollution to soil, surface or groundwaters. It should be disposed of in accordance with the regulations	Construction/track works -Safety Manager EHS manager responsible for the area/ facility		Refer to guidance on dealing with contaminated material. Additional resources may need to be made available to investigate extent and type of contamination present.
Storage of materials/wastes	Entire Alignment for track works	Store chemicals oils and wastes materials such that they do not escape and cause contamination of			

Table 1. Azerbaijan Railways (ADDY): Example Framework for Environmental Management Plan

Subject: Environmental Issues (examples)

Issue	Site Location	Action	Individual(s) Responsible for Action	Target Date	Budget/resource implications/ Other comments
	All areas used for storage of chemicals, oils and wastes	surrounding soil, groundwater and surface water courses via leaching or airborne transfer. It is recommended that excavated materials should be stockpiled on impermeable surfaces and covered to prevent spread of potential contamination prior to re-use or removal from site. Any wastewater discharged from spoil storage areas should be controlled to prevent contamination of groundwater and nearby surface water courses Any water that has come into contact with contaminated material shall not be discharged to public or private surface-water or foul sewers nor to watercourses. It shall be disposed of as directed by the local Water Authority, if necessary using temporary lagoons on site. **Asbestos/Asbestos Waste** If significant quantities of asbestos and/or asbestos waste is encountered, work should stop immediately and an assessment made of the asbestos/asbestos containing material. Large pieces of rigid material should not be broken or cut. Asbestos and asbestos-containing material should be wrapped intact in plastic sheeting or placed in a sealed container or covered skip awaiting disposal by a licensed contractor.			

Table 1. Azerbaijan Railways (ADDY): Example Framework for Environmental Management Plan

Subject: Environmental Issues (examples)

Oil Spillage prevention		**Derailment** (example headings only) **Fire hazards** **Unloading /loading** **Storage and handling of oils used in maintenance activities**			
Emergency response Plan		**Co-ordination with Authorities** **Internal Emergency Response Unit**			
Waste management		**Waste Management Directive** **Waste management plan for each facility**			
Energy Efficiency		**Lighting** **Heating** **Resource use**			
Procurement		**Procurement policy to meet objectives relating to energy efficiency, waste management, safety etc**			
Public Liaison		**Communication links**			
Liaison with authorities on operational activities		**Communication links/meetings**			

Table 1. Azerbaijan Railways (ADDY): Example Framework for Environmental Management Plan

Subject: Environmental Issues (examples)

Issue	Site Location	Action	Individual(s) Responsible for Action	Responsible Authority	Legislation	Guidance/ Standards
			Section Manager / Resident Engineer Groundwater Protection Section Manager / Resident Engineer /		Waste Management Licensing Regulations 1994 (SI 1994 No. 1056) Environmental Protection Act 1990 (Sections 33 and 34) Environmental Protection (Duty of Care) Regulations 1991 Special Waste Regulations 1996 (SI 1996 No. 972) Special Waste (Amendment) Regulations 1996 (SI 1996 No. 2019) Special Waste (Amendment) Regulations 1997 (SI 1997 No. 251) Water Resources Act 1991 Classification, Packaging and Labelling of Dangerous Substances Regulations, 1984(a) Control of Asbestos at Work Regulations, 1987	Environmental Handbook for Building and Civil Engineering Projects: Construction Phase, CIRIA, Special Publication 98, 1994 Construction Practice Specification Part 1 GIBB Environmental - Phase II Environmental Assessment reports (Doc Ref. J96434B/63/B/30 003/P3 and J96434B/63/W/30 002/P3 DoE, Waste Management: The Duty of Care - A Code of Practice, 1991 Environment Agency Pollution Prevention Guidelines Control of Asbestos at Work - Approved Code of Practice, HSC (1988)