

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR IMPROVEMENT
OF
EMERGENCY MEDICAL EQUIPMENT IN BAKU CITY
IN
THE REPUBLIC OF AZERBAIJAN**

January 2008

JAPAN INTERNATIONAL COOPERATION AGENCY

SYSTEM SCIENCE CONSULTANTS INC.

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PREFACES

In response to a request from the Government of the Republic of Azerbaijan, the Government of Japan decided to conduct a basic design study on the project for improvement of emergency medical equipment in Baku city in the Republic of Azerbaijan and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Azerbaijan a study team from 7th May to 1st June, 2007.

The team held discussions with the officials concerned of Government of Azerbaijan, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, mission was sent to Azerbaijan in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Azerbaijan for their close cooperation extended to the teams.

January 2008

Mr. Masahumi Kuroki

Vice-President

Japan International Cooperation Agency

LETTER OF TRANSMITTAL

We are pleased to submit you the basic design study report on the project for improvement of emergency medical equipment in Baku city in the Republic of Azerbaijan.

This study was conducted by System Science Consultants Inc., under a contract to JICA, during the period from May 2007 to January 2008. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Azerbaijan and formulated the most appropriate basic design for the project under Japan's Grant Aid scheme.

Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

Mr. Hiroshi Abo
Project manager,
Basic design study team on the project for
improvement of emergency medical
equipment in Baku city in the Republic of
Azerbaijan
System Science Consultants Inc.

S U M M A R Y

SUMMARY

1. General country description

The Republic of Azerbaijan, located on the west side of the Caspian sea, has a land area of 86,800 km² (approximately 1.1 times of Hokkaido). Total population of Azerbaijan in 2006 is 8.53 million (Azerbaijan in Figure 2007). The northern part of the country facing the Caspian Sea has a wet and temperate climate, while the southern portion of falls within a combination of steppe climate and Mediterranean climate zones. Hinterland areas are generally dry, with a variety of climatic patterns depending on altitude. The Baku metropolitan area within which the Project area lies has a wet and temperate climate. Annual rainfall is around 250 mm and temperature throughout the year ranges 0~35_.

The main supporting industries of the country are petroleum and agriculture. Oil development in the Caspian Sea in recent years (Baku oil field), combined with a rise in world oil prices and investments from Europe and North America, the country has seen a significant growth in the nation's GDP (Gross Domestic Production). Per capita GDP is estimated by the EBRP (European Bank for Reconstruction and Development) to be US\$ 1,521 in 2006. However, with the dissolution of the Soviet Union, the Nagorno-Karabakh War erupted with the neighboring Armenia. Although an armistice came into effect in 1994, armed clashes still continue, and around 800,000 persons have been forced into refugee status. Some 240,000 of the refugees have migrated to Baku city, resulting in disparities in levels of medical care and standards of living.

2. Background of the Project

The Republic of Azerbaijan has formulated a national development plan entitled State Programme on Poverty Reduction and Sustainable Development (2006~2015). Within the national development plan, health sector is positioned as a major field to address the overall poverty in the country. Important issues in this regard include: addressing tuberculosis and HIV/AIDS (Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome) within the impoverished stratum of society, equitable access to health care services, and investment in construction and/or rehabilitation of medical facilities as well as primary health care (PHC) in general.

Population within the Azerbaijan metropolitan area centered on Baku city is 1.89 million (official data for 2006 by the State Statistical Committee). With the inclusion of refugees, this number increases to 3.5 million which accounts for 41% of the total country's population of 8.53 million (2006).

The current emergency medical service in Azerbaijan inherits the same structure that existed during the Soviet era. When an emergency call is received, an emergency team (doctor, nurse and driver) is dispatched. If the doctor deems necessary that the patient be transported to a hospital, the patient is

then taken to a hospital that admits emergency patients and provides appropriate emergency medical treatment. Although renovation works have begun in recent years for hospitals to accept emergency patients, a thorough examination and treatment is not possible due to the existing antiquated equipment of Soviet made from 15~20 years ago.

Emergency service staffs receive regular update training in order to maintain a level of emergency medical procedure. The existing Emergency Medical Service Station (EMS) Training Center is not equipped with either human models or observational equipment. Trainees must thus physically interact in practical training procedures that result in a situation where neither adequate nor precise training is performed.

Under these situations, since the appointment of new Minister of Health in 2005, various reform programs are being aggressively pursued to strengthen PHC, to address inadequate numbers of hospitals and beds, to strengthen the emergency medical services system and to establish diagnostic centers throughout the country. However, with the impact of a battered economy after independence, budget allocation for establishing and/or improving emergency medical services have not been adequate, and thus making it impossible to appropriately respond to emergency medical services requirements in light of the rapid increase in the metropolitan area population.

Under this circumstance, the Government of Azerbaijan requested grant-aid cooperation from Japan to improve and strengthen the emergency medical services. In response to the request from the Government of the Republic of Azerbaijan, the Government of Japan conducted a preliminary study, and entrusted the study to the Japan International Cooperation Agency (JICA). JICA then sent a preliminary study team to Azerbaijan from 30th October to 26th November, 2006. As a result of the study, the following equipment was requested by Azerbaijan side (33 items).

- Vehicle for emergency patient transportation (Ambulance car 17 units, including Reanimation car 9 units)
- Equipment for ambulance cars (Portable patient monitor, Stretcher, Ventilator, 16 items)
- Communication device (radio transceiver)
- Equipment of reanimation room for emergency patient transfer major four Hospitals (Blood gas analyzer, Infusion pump, Defibrillator, 15 items)

In response to the request from the Government of the Republic of Azerbaijan, the Government of Japan decided to conduct a basic design study, and JICA sent a study team from 7th May to 1st June, 2007. The basic design study team carried out discussions with officials concerned of Ministry of Health, Baku city general health department, EMS and target hospitals, and investigated facilities of the target hospitals.

As a result of discussions, it was found that the presidential decree No. 1972 was issued; the decree has already called for procurement of ambulance cars and related equipment which are part of the requested

equipment of the Project.

The team after returning to Japan conducted further studies on the Project and discussed with officials concerned. As a result the strategy of Project basic design and components of the equipment were confirmed. A mission was then sent to from 26th November to 7th December 2007 to Azerbaijan in order to discuss a draft basic design. On this basis, this report was subsequently prepared.

2. Objective of the Project

The objective of the Project is to improve and strengthen the quality of emergency medical services in Baku metropolitan area by procuring equipment for the four emergency hospitals and EMS training center. The Project will procure the following equipment to achieve the Project objective.

- The reanimation equipment for expanding the benefit of emergency medical services at four major emergency hospitals in Baku metropolitan area, to which critical patients are transported.
- Training equipment for emergency service staffs of EMS to upgrade the capacity and quality of the emergency medical services.

Target sites of the Project are; (i) EMS training center, and four emergency hospitals comprising (ii) Baku City Clinical Hospital No. 3, (iii) Unified Hospital No. 26, (iv) Republican Neurosurgery Hospital, and (v) Baku City Clinical Hospital No. 6.

3. Basic plan (Equipment plan)

Formulation of the basic plan on the equipment was carried out based on the following design policy. The needs of the training equipment were confirmed by the team during study period, and the Government of Azerbaijan newly requested.

[Laboratory equipment]

The minimal necessary quantities of equipment confirmed as essential to examination procedures are to be provided. Also basic equipment which is not necessary to allocate significant cost for operation and maintenance is selected.

[Reanimation equipment]

The minimal necessary contents of treatment and monitoring equipment for emergency patients at reanimation rooms are provided. The quantities of equipment to be supplied for reanimation rooms is determined on the basis of (i) number of patients received, (ii) length of stay, and (iii) number of rooms.

[Training equipment]

The necessary equipment for improvement of skills in emergency medical services is to be

provided. The quantities of equipment are considered with number of participants for group practice.

[Ambulance cars and mounted equipment]

As the presidential decree has already called for 150 ambulances with sets of mounted equipment, these have to be outside the scope of the Project.

The list of equipment based on the above study is shown below.

Table Outline of the Equipment

	No.	Equipment Name	Q'ty	Application
Laboratory equipment	1	Blood gas analyzer	4	For measuring blood O ₂ , CO ₂ and pH, etc
	2	Electrolyte analyzer	4	For measuring blood Na ⁺ , Cl ⁺ and K ⁺ etc
	3	Blood cell counter	4	For counting blood WBC, RBC, HCT, etc
	4	Coagulometer	4	For analyzing coagulation factors
	5	Glucose analyzer	4	For measuring blood glucose
	6	Biochemical analyzer	4	For measuring components of blood specimen
Reanimation equipment	7	ECG (12ch)	4	For monitoring heart activities by electric potential
	8	Patient monitor	22	For checking patient condition
	9	Ventilator	12	For respiration support of disability spontaneous respiration patient
	10	Infusion pump	22	For automated intravenous drip infusion
	11	Suction pump	4	Evacuation device for bile or saliva
	12	Fiber scope set	4	Video monitoring device into broncho and gastro
	13	Defibrillator	4	Recovery from fibrillation
	14	Infant warmer	4	For protection of low temperature neonatal
	15	Syringe pump	4	Intravenous drip infusion by syringe with high accuracy
	16	Fetal doppler	3	For monitoring fetal cardiac rate
Training equipment	17	CPR model (Adult)	5	For training in cardiopulmonary resuscitation by adult model
	18	CPR model (Child)	5	For training in cardiopulmonary resuscitation by child model
	19	CPR model (Infant)	5	For training in cardiopulmonary resuscitation by infant model
	20	Trauma kit	5	For training in judgment and care of burn and cutting conditions
	21	Patient monitor	5	For training in how to use monitor device and judgment of data by patient temp., heart beat/rate, blood pressure data
	22	Defibrillator	5	For training in usage of defibrillator device and learning of how to treat about fibrillation patient
	23	ECG (12ch)	5	For training in patient monitoring method & judgment by electric data
	24	Stretcher	5	For training in how to transfer patient from home to hospital & manipulate of stretcher
	25	Back board set	5	For training in how to fix the transferred patient board
	26	Splint set	5	For training in split usage and how to fix on bone fracture
	27	Intubation set	5	For training in maintenance of a patient airway
	28	Neck collar set	5	For training in Fixing device for jaw and endite

4. Project implementation schedule and cost estimation

The Project implementation schedule under the Japan's Grant Aid cooperation scheme is 11 months. The detailed design procedures are anticipated to require 4 months, and the equipment procurement process is expected to take 7 months. The Project cost for Azerbaijan side, if the Project is implemented as a Japan's Grant Aid, is 2,000 Manat (equivalent as 0.3 million Japanese yen).

5. Implementation body of the recipient country

The implementation body for the Project is the Ministry of Health, the Government of Azerbaijan. The targeted EMS training center and four hospitals will be primarily responsible for equipment operation and maintenance. The operation and maintenance costs of the Project are to be borne by the Ministry of Health. The Azerbaijan economy has been growing steadily, therefore budget allocation to the Project will be secured.

6. Operation and maintenance of the Equipment

The medical staffs at laboratories and reanimation rooms in target hospitals will operate and maintain the equipment provided by the Project. Training equipment will be operated and maintained by trainers at training center. They have sufficient skill and knowledge for the equipment. Therefore, operation and maintenance of the Equipment to be provided by the Project will be smooth and effective.

7. Project effect and recommendation

Impacts and effects expected to be generated by the Project are shown below.

(1) Direct impacts and related improvement effect

1) Improvement of capability of 4 hospitals

At present, laboratory and treatment procedures are done manually due to lack of equipment.

Accordingly, provision of necessary equipment will:

- Enable the 20,000 persons conveyed to the four major hospitals to avail of enhanced emergency medical service (of these, 5,300 persons are hospitalized and 15,000 persons are released after receiving primary emergency treatment), and
- Enable approximately 1,800 medical personnel at the four major hospitals to provide emergency medical service by means of the equipment provided.

2) Improvement of capability of EMS training center

At present, approximately 1,200 persons of the total emergency team force of 2,400 persons are

receiving training at the training center. Accordingly, by providing necessary equipment in this regard, the other half 1,200 persons of the 2,400 staff, and the future 500 emergency service staffs in case where the current 133 emergency teams are expanded to 180 teams (amounting to a total of 2,900 persons) can be provided with training and guidance in quality emergency medical services.

(2) Indirect impacts and related improvement effect

- As a result of the envisioned training and resultant upgrading of emergency service staffs' capability, some 400,000 patients and their family members each year can avail themselves of higher quality emergency medical service.
- The metropolitan area which is targeted under the Project has an officially indicated a population of 1.89 million. However, with the inclusion of refugees, the area population is 3.5 million (which accounts for 41% of the nation's total population of 8.53 million). This total population will ultimately benefit either directly or indirectly from the Project.

(3) Recommendations

In order that the equipment supplied under the Project is operated efficiently and effectively, it is recommended that special attention be given to the following points.

1) Ensuring of the undertakings required to the Azerbaijan side

It is essential that the Government of Azerbaijan appropriately carry out the undertakings required by the recipient country. Specifically, it is important that renovation works for facilities be properly implemented prior to arrival of equipment from Japan on site. In particular this applies to renovation works for the Municipal No. 3 Clinical Hospital and training center.

2) Budget allocation, personnel appointment and initial training (internal training) to ensure appropriate operation and maintenance

There are sufficient personnel available for deployment to the target hospitals and training center under the Project. Furthermore, the users have appropriate skills for operating equipment provided by the Project. Accordingly, a continuation of the present operational structure and personnel are prerequisites of the Project. It is thus important that respective facilities targeted under the Project effectively maintain their current personnel structure and workforce lineup. Likewise, an appropriate funding allocation system will be necessary. In addition, it will be necessary for staff personnel and emergency service staffs who have received training in equipment usage, to pass this training and knowledge on to other personnel through internal training and technology transfer.

3) Daily management of equipment

Although existing equipment at the targeted facilities is old Soviet manufacture, maintenance is being adequately carried out. However, the equipment to be provided under the Project will entail some different points of caution with regard to daily management and maintenance. These must be borne in mind and reflected in daily inspections, maintenance and equipment cleaning in order to discover potential problems at the earliest possible stage and avoid subsequent equipment breakdown or damage.

4) Disposal of medical waste

Equipment under the Project includes blood-gas analyzer which results in the generation of bodily liquid waste. In many cases, liquid waste is currently disposed of in the same manner as wastewater, which in the long run has potential deleterious impact on the environment. Therefore, it was proposed to the Azerbaijan side during the field work period that the special storage can for the liquid waste be prepared and waste management be consigned to a specialized agent or organization. Accordingly, a prompt response by the Government of Azerbaijan is necessary when the project is implemented.

5) Linkage with other technical cooperation programs

The existing emergency service staffs have no problems regarding knowledge and technical ability for implementing the old Soviet-style emergency medical service; however they do not have sufficient expertise in the case of internationally mainstream emergency medical technology. In this regard, it is important to consider the dispatch of Japanese experts for dissemination of emergency medical technology aimed at improving emergency medical service.

In addition, linkage has to be made with training courses in Japan regarding emergency medical systems and technology. It is further deemed effective to send concerned personnel to a third country for training; in this case Turkey which possesses advanced emergency medical services and is both culturally and linguistically akin to Azerbaijan.

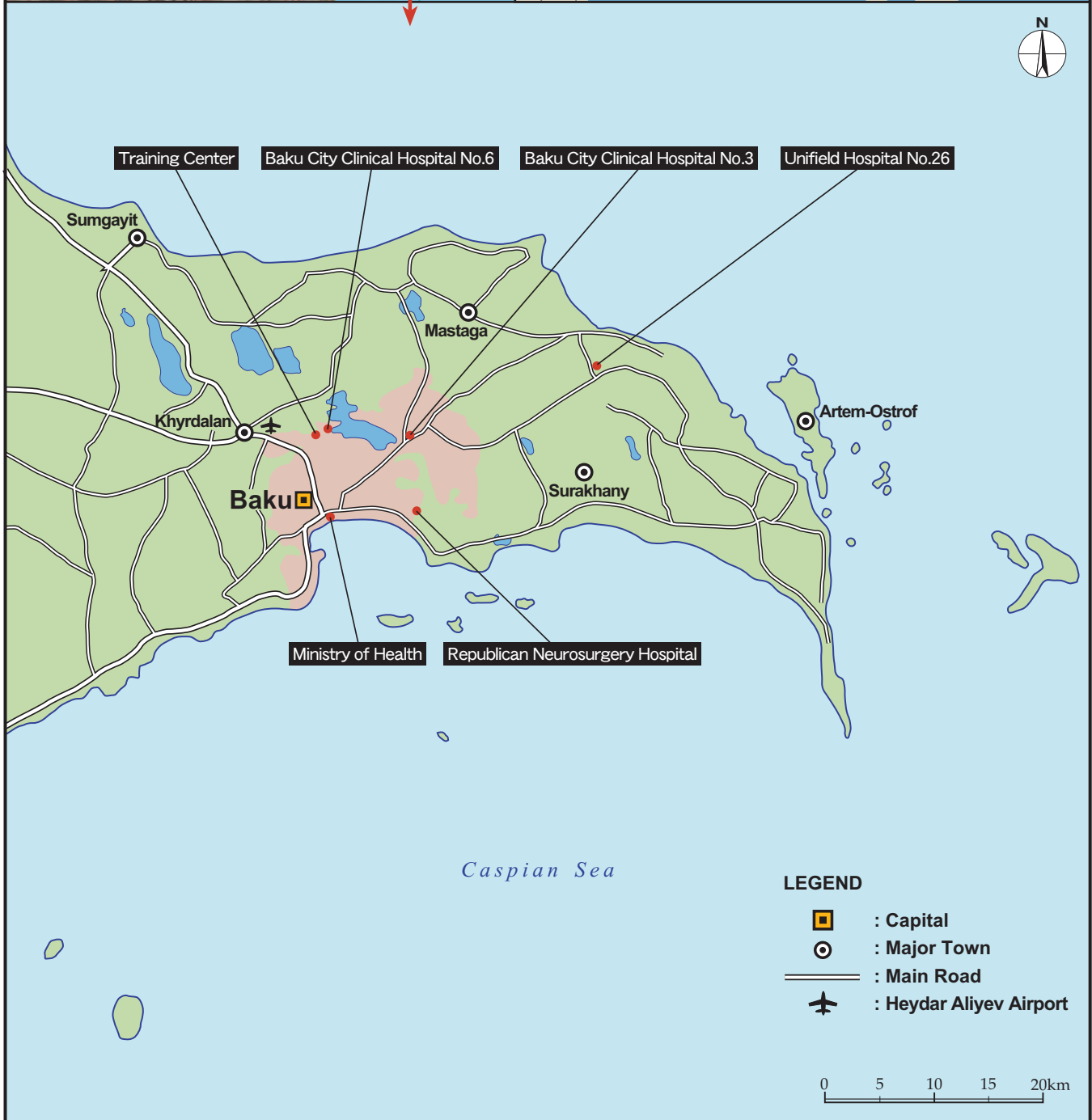
CONTENTS

Preface		
Letter of Transmittal		
Summary		
Contents		
Location Map		
List of Figures and Tables		
Abbreviations		
Chapter 1	Basic concept of the Project	1
Chapter 2	Contents of the Project	5
2-1	Basic concept of the Project	5
2-2	Basic Design of the requested Japanese Assistance	6
2-2-1	Design policy	6
2-2-2	Basic plan (Equipment plan)	8
2-2-3	Basic Design drawing	25
2-2-4	Implementation plan	32
2-2-4-1	Implementation policy	32
2-2-4-2	Implementation conditions	33
2-2-4-3	Scope of Works	33
2-2-4-4	Consultant supervision	34
2-2-4-5	Quality control plan	34
2-2-4-6	Procurement plan	35
2-2-4-7	Operational guidance plan	35
2-2-4-8	Soft component plan	35
2-2-4-9	Implementation schedule	36
2-3	Obligations of recipient country	38
2-4	Project operation plan	39

2-5	Project cost estimation	40
2-5-1	Initial cost estimation	40
2-5-2	Operation and maintenance cost	40
2-6	Other relevant issues	41
Chapter 3	Project evaluation and recommendations	43
3-1	Project effect	43
3-2	Recommendations	45

[Appendices]

1.	Member list of the Study Team	A-1
2.	Study schedule	A-2
3.	List of parties concerned in the recipient country	A-4
4.	Minutes of discussions	A-6
5.	References	A-21



LOCATION MAP

LIST OF FIGURES, TABLES AND GRAPHS

Figures

Figure 1	Layout plan - Baku City Clinical Hospital No. 3	25
Figure 2	Layout plan - Baku City Clinical Hospital No. 6	27
Figure 3	Layout plan - Unified Hospital No. 26	29
Figure 4	Layout plan - Republican Neurosurgery Hospital	30
Figure 5	Layout plan - EMS Training Center	31
Figure 6	Project implementation schedule	37

Tables

Table 1	Meteorological data in Baku city	2
Table 2	Requested equipment list	16
Table 3.	Intended purpose of requested equipment	17
Table 4	Number of patient monitors based on patient traffic	20
Table 5	Training equipment for emergency service staffs	21
Table 6	Design Equipment list	22
Table 7	Application of the Equipment	23
Table 8	Scope of Works	33
Table 9	Project costs borne by the Azerbaijan side	40
Table 10	Breakdown of the estimated operation and maintenance cost	41
Table 11	Operation and maintenance cost	41
Table 12	Project effect	43

ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
A/P	Authorization to Pay
B/A	Banking Arrangement
CPR	Cardiopulmonary Resuscitation
EBRP	European Bank for Reconstruction and Development
ECG	Electrocardiograph
EMS	Emergency Medical Service Station
E/N	Exchange of Notes
GDP	Gross Domestic Production
HIV	Human Immunodeficiency Virus
ICU	Intensive Care Unit
JICA	Japan International Cooperation Agency
MRI	Magnetic Resource Imaging
PHC	Primary Health Care
USA	United States of America
USAID	United States Agency for International Development

CHAPTER 1

BACKGROUND OF THE PROJECT

Chapter 1 Background of the Project

1-1 Background of request for Grant Aid

(1) Background of the request

Population within the Azerbaijan metropolitan area centered on Baku city is 1.89 million (official data for 2006 by the State Statistical Committee). With the inclusion of refugees this figure increases to 3.5 million which accounts for 41% of the total country's population of 8.53 million (2006). Although the national economy has improved in recent years, services in the health sector lagged behind. This applies in particular to emergency medical services which are in a state of crisis requiring urgent improvement measures. However, the impact of a battered economy after independence has resulted in a myriad of issues that merit urgent attention with regard to improving social infrastructure and public services. Budget allocation for establishing and/or improving emergency medical services have not been adequate, and thus making it impossible to appropriately respond to emergency medical services requirements in light of the rapid increase in the population of metropolitan area.

The current emergency medical service in Azerbaijan in particular inherits the structure that existed during the Soviet Union era. When an emergency call is received, an emergency team (doctor, nurse and driver) is dispatched. If the doctor deems necessary that patient be transported to a hospital, then the patient is taken to a hospital that admits emergency patients and provides appropriate emergency medical treatment. Although renovation works have begun in recent years for hospitals to accept emergency patients, a thorough examination and treatment is not possible in light of the fact that available equipments are manufactured 15~20 years ago during Soviet era and are superannuated.

Emergency service staffs receive regular update training in order to maintain a level of emergency medical procedure. The existing Emergency Medical Service Station (EMS) training center is not equipped with either human models or observational equipment. Trainees must thus physically interact in practical training procedures that result in a situation where neither adequate nor precise training is performed or acquired.

Under these circumstances, the Government of Azerbaijan formulated an emergency medical equipment plan to upgrade and strengthen emergency medical services in the metropolitan area. As a result, a request was made to the Government of Japan for Grant Aid project in October 2006.

(2) Summary of the request

- 1) Ambulance cars: 17 standard ambulance cars (including 9 special ambulance cars for transporting serious case patients)
- 2) Ambulance mounted equipment: Patient monitoring equipment, stretcher, artificial

respirator, etc. (15 items)

- 3) Communication equipment: Radio communication equipment (1 item)
- 4) Emergency reanimation equipment: Blood-gas analyzer, infusion pump, defibrillator, etc. (15 items)

Total: 33 items

1-2 National conditions

The Republic of Azerbaijan, located on the west side of the Caspian Sea, has a land area of 86,800 km² (approximately 1.1 times of Hokkaido). The northern part of the country facing the Caspian sea has a wet and temperate climate, while the southern portion falls within a combination of steppe climate and Mediterranean climate zones. The hinterland areas are generally dry with a variety of climatic patterns depending on altitude. Monthly average temperature and rainfall in Baku city are shown in following table.

Table 1 Meteorological data in Baku city

	Average Temp.(°C)			Average Rainfall (mm)		
	2003	2004	2005	2003	2004	2005
January	5.1	6.9	6.2	13.8	6.9	38.5
February	3.0	6.3	3.4	67.7	6.3	17.5
March	4.0	8.8	7.1	62.1	8.8	18.6
April	9.3	11.1	12.9	32.8	11.1	15.9
May	18.3	17.0	19.3	13.2	17.0	10.8
June	21.0	22.5	22.3	23.2	22.5	4.8
September	24.8	24.3	27.0	3.1	24.3	0.4
August	26.3	26.8	26.7	1.9	26.8	1.4
September	21.6	21.6	23.1	28.4	21.6	13.2
October	18.0	16.2	16.6	29.1	16.2	32.3
November	10.0	11.5	11.4	68.0	11.5	25.6
December	6.6	5.6	8.6	13.7	5.6	73.0

Source : State Statistical Committee

The maximum temperature at Project sites in summer rises to more than 30°C, and on the other hand, temperature drops to below freezing point in winter. Although the mountainous areas receive snow during the winter, snowfall is minimal in the Project area. Accordingly, special equipment specifications for a frigid environment are not necessary. Particularly in the case of equipment to be housed within hospitals or the training center; therefore special attention for selection of equipment like moisture and dust proof is not required.

1-3 Socio-environmental considerations

(1) Environmental constraints

1) Disposal of solid medical waste

At present, there are no defined criteria in Azerbaijan regarding the disposal of solid medical waste. However, the wastes from respective hospital patient wards, laboratories, X-ray rooms, etc. are generally separated into flammable, non-flammable and pharmaceutical waste prior to being placed in the hospital waste disposal dump. These wastes are regularly collected by a contractor and appropriately disposed.

2) Drainage of liquid medical waste

Likewise in solid wastes, there are no defined criteria at present in Azerbaijan regarding the drainage of liquid medical waste. Water used to clean glassware instruments in the course of patient examination/test is flushed together with general wastewater. It is accordingly necessary to separate medical waste water from general wastewater, with medical waste fluids being first chemically neutralized prior to disposal.

(2) Points of special note with regard to socio-environmental issues

Points of special note under the Project with regard to socio-environmental issues are shown below.

- 1) It is assessed that the Project will have no adverse socio-environmental impacts. This is due to the fact that equipment to be provided under the Project is for hospital reanimation rooms and laboratories, as well as for an emergency service staff training center. At existing hospitals and training center, routine medical activities and staff trainings are being implemented without any socio-environmental issues, thus it is possible to assume that the Project does not have any socio-environmental impacts.
- 2) Transport of equipment into the targeted sites, as well as installation of the equipment, is not anticipated to pose any problems due to the fact that neither unusual items nor large scale installation works are considered under the Project.
- 3) Medical solid and fluid wastes generated as a result of the Project will not be significantly greater than that which is already being processed by the target hospitals in the course of present examination and treatment activities. However, biochemical analyzer and blood cell counter provided under the Project will produce medical fluid wastes. Medical fluid waste is currently mixed with general waste water. Therefore, it is necessary for the Azerbaijan side to prepare a special storage can for the liquid waste, and to segregate the medical solid and fluid

wastes, as well as to pay environmental attention for waste management to be consigned to a specialized agent or organization sufficiently.

CHAPTER 2
CONTENTS OF THE PROJECT

Chapter 2 Contents of the Project

2-1 Basic concepts of the Project

The Republic of Azerbaijan has formulated a national development plan entitled State Programme on Poverty Reduction and Sustainable Development (2006~2015). Within the national plan, health sector is positioned as a major field to address the overall poverty in the country. Important issues in this regard include: addressing tuberculosis and HIV/AIDS (Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome) within the impoverished stratum of society, equitable access to health care services, and investment in construction and/or rehabilitation of medical facilities and Primary Health Care (PHC) in general. Since the appointment of new Minister of Health in 2005, various reform programs are aggressively pursued to strengthen PHC, to address inadequate numbers of hospitals and beds, to strengthen the emergency medical services system and to establish diagnostic centers throughout the country. The President also has more emphasis on strengthening of emergency medical service system, and the presidential decree No. 1972 for procurement of ambulance cars, mounted equipment and emergency medical service information system (communication devices) was issued on 20th February 2007.

(2) Objectives of the Project

Population within the Azerbaijan metropolitan area centered on Baku city is 1.89 million (official data for 2006 by the State Statistical Committee). With the inclusion of refugees this figure increases to 3.5 million which accounts for 41% of the total country's population of 8.5 million (2006). Although the national economy improved in recent years, services in the health sector lagged behind. This applies in particular to emergency medical services which are in a state of crisis requiring urgent improvement measures. However, the impact of a battered economy after independence has resulted in a myriad of issues that merit urgent attention with regard to improving social infrastructure and public services. Budget allocation for establishing and/or improving emergency medical services have not been adequate, and thus making it impossible to appropriately respond to emergency medical services requirements in light of the rapid increase in the population of metropolitan area. Under this situation, the Government of Azerbaijan requested for grant-aid cooperation from Japan to improve and strengthen the emergency medical services.

Accordingly, this Project aims to upgrade the quality of emergency medical services within the metropolitan region by procuring equipment for four emergency hospitals and EMS Training Center.

In the original equipment list submitted by the Government of Azerbaijan, it indicated ambulance cars, mounted equipment and communication devices. However, it was found that the presidential decree No. 1972 for improvement of emergency medical service system issued on 20th February 2007 has already called for procurement of 150 units of ambulance cars, mounted communication devices, and accordingly the process to procure them has begun. Therefore, when conducting the basic design study, the above

mentioned equipment in the initial request is excluded from the Equipment plan of the Project.

(3) Outline of the Project

The Project will procure the following equipment to achieve the above described Project objectives.

- The reanimation equipment for expanding the benefit of emergency medical services at four major emergency hospitals in Baku metropolitan area, to which critical patients are transported.
- Training equipment for emergency service staffs of EMS to upgrade the capacity and quality of the emergency medical services.

Target sites of the Project are; (i) EMS Training Center, and four emergency hospitals comprising (ii) Baku City Clinical Hospital No. 3, (iii) Unified Hospital No. 26, (iv) Republican Neurosurgery Hospital, and (v) Baku City Clinical Hospital No. 6.

2-2 Basic Design of the requested Japanese assistance

2-2-1 Design policy

(1) Basic approaches

- 1) To provide equipment to improve and strengthen the emergency medical services in the Baku metropolitan area of Azerbaijan.
- 2) To provide equipment for expanding the benefits of emergency medical services at the hospitals that receives emergency patients, as well as the training equipment at the EMS Training Center for upgrading the emergency service staffs' capabilities.
- 3) Project content is to be sustainable, taking into full account the operational and maintenance capability of the Azerbaijan side with regard to the proposed equipment (staffs allocation, technical levels, budget, operation and maintenance capabilities, etc.).

(2) Environmental aspects

Azerbaijan facing the Caspian Sea has a relatively mild climate. Although the mountainous areas get snow during the winter, snowfall is minimal in the Project area. Accordingly, special equipment specifications for extremely cold and frigid environment are not necessary; no climatic considerations are required particularly for equipments that are to be housed within hospitals or the training center at normal room temperature.

(3) Socio-economic aspects

Islam is the state religion of Azerbaijan; about 95 % of the population is Muslim (70% of Shaih and

30% of Sunnah). The influence of the religion is not so strict on daily hospital activities; isolation of female and male in hospital and restriction of physicians (male physicians can treat only male patients) are not in place. Therefore, separate medical equipment for female and male is not required. Accordingly, quantity of equipment in the Project will be necessarily in minimum quantity.

(4) Medical equipment registration

At present, there is no registration system in Azerbaijan for medical equipment. Although the Innovation and Supply Center under the Ministry of Health has embarked on an effort to draft an equipment standards system, concrete results have not yet been expected or anticipated. Thus there will be no institutional hurdles to be specifically addressed in procuring the planned equipment under the Project.

(5) Local agents

There are many marketing agents in Azerbaijan dealing in medical equipment, including for those manufactured in Japan. Particularly in the case of local agents dealing in Japanese made medical equipment, the agents dispatch engineers to training organized by Japanese medical equipment manufacturers. These local agents accordingly are very knowledgeable in the use of Japanese manufactured items. Local agents are also staffed with engineers who can supervise equipment installation and test operation. It is concluded, therefore that there will be no technical constraints in implementing the Project. Furthermore, local agents have their own regular stocks of consumables and spare parts required for equipment operation.

(6) Operation and maintenance

The Azerbaijan economy has been growing steadily with the development of its oil drilling industry, and the emergency medical services sector has been allocated budget in proportion to the economic growth. However, there is insufficient budget allocation to ensure the smooth and timely procurement of consumables and spare parts. Particularly with regard to consumables, disposable items are to be avoided under the Project, and instead maximum reuse of the supplied items must be encouraged through sterilization.

Although the personnel (i.e., doctors, nurses, and laboratory technicians), who will utilize the equipment provided under the Project are generally well versed in the use of the planned items, they are used to the existing equipment that were mostly manufactured during the Soviet era, and differ in terms of special caution needed when utilized. Accordingly, it is necessary that equipment provided under the Project be accompanied with appropriate user manuals, and also initial training be implemented with regard to equipment maintenance.

(7) Setting equipment standards

Reanimation equipment will be provided and installed at the reanimation rooms and examination rooms of four target hospitals; these rooms constitute a part of hospital function. Since doctors from the various departments will take turns on emergency call duty, accordingly the reanimation equipment has to be of the standard grade as utilized in respective treatment departments, reanimation rooms and examination rooms at the targeted hospitals.

Training equipment for emergency service staffs requiring complex computerized control will be outside the scope of equipment. Instead, equipment such as CPR (cardiopulmonary resuscitation) models and equipment for transfer patients will be provided.

(8) Procurement method and construction period

A portion of the equipment for hospital and training center use will require installation works; therefore, the installation work as well as handling procedure will be carried out under the Project. The Government of Azerbaijan has plans for construction works to improve the reanimation and examination rooms at the Baku City Clinical Hospital No. 3 by the end of this year. Similar improvement is also planned for the Baku City Clinical Hospital No. 6 for completion within fiscal 2008. It is thus essential under the Project to thoroughly confirm the progress of these works.

2-2-2 Basic plan (Equipment plan)

(1) Overall plan

The content of request from the Government of Azerbaijan encompasses the procurement of (i) ambulances and ambulance mounted equipment, (ii) reanimation room and examination room, equipment for hospitals that accept emergency patients, and (iii) equipment to train the emergency service staffs.

The current status of emergency medical service in Azerbaijan is described below.

1) Current status of ambulance cars and mounted equipment

A total of 133 ambulance cars are deployed to the 21 EMS sub-station and outlets (as of May 2007); of these, 39 vehicles are old Latvia-made models deployed 15 years ago. The remainder are vehicles of Russian-make procured relatively recently (within the last 2~3 years).

Under the presidential decree, it is planned to procure 150 ambulances for deployment to EMS sub-station and branches in Baku, and steadily phase out vehicles that have outlived their longevity (or if still in operable condition, transfer these to emergency care facilities in more

remote and less busy areas). The other option would be to convert the role of such vehicles to that of transporting supplies, etc. required by hospitals in the area.

The existing standardized ambulance equipment is folding stretchers, wooden splints, cardioverter defibrillator, and electrocardiogram equipment, etc. This equipment is mainly of Russian-made that has been in use for 25 years, and is both obsolete and deteriorated. As a result, patients cannot be provided with adequate emergency treatment. Accordingly, the Government of Azerbaijan plans to procure ambulance mounted equipment in quantities commensurate with the 150 vehicles to be procured as described above.

Facilities, emergency medical services system and existing equipment at EMS, its sub stations and branches are as described below.

a. EMS Sub-Stations

Facilities: Only the No. 7 sub-station has a dedicated facility while other sub-stations have used facilities of polyclinic, hospital, nursery school, musical school and vocational school. Each sub-station is fitted with a control room (reception), doctor standby room and outpatient examination room. Electrical power is available at all sub-stations; however, voltage is unstable due to obsolete transformer equipment. Furthermore, power blackouts occur during the winter season when general power consumption is very high.

Health care system: Staffs in control room responding to emergency calls are generally five persons; all are on duty 24 hours per day and prepared to respond to direct phone calls from patients. Dispatched emergency service team in response to an emergency call consists of a doctor and nurse, with additional co-medical personnel also deployed who are specially trained to deal with emergency cases.

At the No. 21 sub-station two emergency services teams are deployed. Nevertheless, general emergency medical services are not being fully carried out. Since January 2003, a paid-for patient transport service has been introduced. In the case of this service, an incoming emergency call (103) is evaluated by the responding operator, and if the situation is deemed not to be an emergency, the caller is advised to the effect that a paid-for transport service to the hospital is available for use. If the caller agrees to the terms, an ambulance is then dispatched. Availing of private sector transport service can cost up to US\$ 120 per hour. At this branch, a modest US\$ 20 is levied for patient transport that targets middle and low income persons.

Existing equipment: Both general type and reanimation type ambulances are in place (herein after called as "ambulance car" and "reanimation car". In addition, the facility is also equipped with vehicles mounted with (i) mobile x-ray equipment, (ii) special pediatric equipment, and (iii) equipment to tend to psychiatric cases. However, these vehicles are old Latvian and Ford models that were procured 15 years ago and are on the verge of being scrapped. In addition, GAZ manufactured Gazelle and Volga models have been procured 2~3 years ago. However, annual odometer distance is 30,000~40,000 kilometers, with some vehicles having covered more than 100,000 kilometers distance in total.

Ambulance equipment is folding stretchers and wooden splints. At the time of dispatch, attendant doctors and nurses bring on board an emergency kit (containing medicines, intubation set, etc.), defibrillator, ventilator, ECG (electrocardiogram), etc. depending on the anticipated status of the patient to be picked up.

However, this equipment is former Soviet made and has been in use for 25 years. It is thus old and in deteriorated condition. Further complicating matters is the fact that spare parts in many cases cannot be procured since manufacturers are no longer in business. Even when procurable, this takes a long time and parts are often of poor quality. As a result, equipment does not perform up to its intended level. Previously, malfunctioning medical equipment was repaired by the AZMed Technica responsible for EMS. However, this activity has been discontinued, and equipment repair is accordingly requested to the marketing agent for the medical equipment.

b. Outlets

Facilities: These are essentially similar to that of the sub-stations. However, because prior to being converted to health care facilities they were in most cases general residences, shops, etc., adequate renovation work has yet to be done. In many cases this involves major floor and wall reconstruction.

Health care structure: 3~5 persons are on standby to respond to emergency calls 24 hours a day. However, there are no staffs to respond to serious emergency cases.

The Umbaki branch under the No. 20 sub-station is staffed with only two auxiliary nurses, and there is no emergency service team and ambulance car. It responds to emergency cases in the 1,700 member community within which it is located. When an emergency case occurs within its jurisdiction, an ambulance

car is subsequently dispatched from the No. 20 sub-station to which the facility belongs.

Medical equipment: The branches are equipped only with the ambulance cars, and do not have on hand a reanimation car. As in the case of the sub-stations, those vehicles are obsolete Soviet-era models.

2) Existing situation of emergency hospitals

The target hospitals reanimation rooms are equipped with basic equipment including ventilator, sterilizer, defibrillator, etc. Almost all the equipment are Russian-made, and have been in use for 20~25 years. In addition, as the equipment are lacking in quantities, an excessive burden falls upon doctors and nurses who are responsible for monitoring any sudden changes in patient condition in the reanimation room.

Examination room equipment includes only basics such as centrifuge, sterilizer, calorie meter and test tubes/flasks, etc. As a result, almost all examination works are done by hand. Most equipment is Russian-made, and has deteriorated over time. It is thus not possible to obtain speedy and accurate test results.

Accordingly under the Project, equipment generally present in a reanimation room (for patient monitoring and recovery) is to be provided to alleviate excessive burden on current doctor and nurse staff. Also, examination equipment is to be provided to enable speedy lab results in terms of blood testing, electrolyte analysis and biochemical evaluation.

The specific conditions affecting the targeted hospitals are set out below.

a. Baku City Clinical Hospital No. 3

The facility is located approximately in the middle of the Absheron peninsula, and contains 1,200 beds. It is an integrated hospital with the following departments: surgery, pediatrics, plastic surgery, gynecology, obstetrics, dermatology, ophthalmology, otology, neurology, emergency, radiology, laboratory, etc. The hospital is staffed with 170 doctors and 500 nurses. Emergency patients are received at a rate of 100~150 per day. Emergency medical care is available 24 hours a day, with 20 doctors generally on call. The hospital has jurisdiction over Sabunchu, Suraxani, Azibzbeyov and Absheron districts, and a part of Nizami districts covering approximately one million people.

Facilities: This hospital is currently undergoing renovation works under budget allocation by the Government of Azerbaijan. Renovation of the urology department has already been completed. Under the current plan, renovation of the operation

theater and the emergency room are planned for completion by the end of this year. Reanimation equipment and examination equipment to be provided under the Project will be installed on the third floor surgery/trauma ward. The renovation plan calls for a resuscitation room 5.5 _ 18 m dimension with 10 beds, and an examination room with dimension of 3.2 _ 5.7 m. Also, the gynecology ward on the second floor includes two separate rooms respectively for normal and abnormal delivery.

Medical equipment:

[Reanimation room]

All equipment is Russian-made and has been in use for 20~25 years including only ventilators (4 units) and defibrillator (one unit). Due to age, this equipment does not function at an adequate level.

[Laboratory]

The laboratory is equipped with one Russian made distiller, two sterilizers, one centrifuge, one balance and various test tubes/flasks. There is no analytical equipment.

[Gynecology ward]

The ward is equipped with two Russian made open type infant warmers (procured 25 years ago), and one USA (United States of America) made closed type infant warmer (manufactured 15 years ago). The open type units suffer from heat source malfunction while the closed type suffers from malfunction of the heat adjustment unit.

b. Baku City Clinical Hospital No. 6

This facility is located around 30 minutes to the north by vehicle from center of Baku. It has 400 beds and performs over 1,000 operations annually. The hospital is staffed with 100 doctors and 296 nurses. It is an integrated hospital with departments including trauma, pediatrics, gynecology and otolaryngology. In 2006, the facility treated 510 emergency patients. The No. 16 sub-station locates on the hospital property.

Facilities: The main building consists of a biochemistry laboratory on the first floor, an ECG room on the second floor and a reanimation room on the fourth floor. It is fitted with 11 beds. A nursery is also included on the second floor gynecology ward.

Medical equipment:

[Reanimation room]

The ward is equipped with one unit of Russian made defibrillator (procured 20 years ago), one unit of defibrillator provided under international assistance (currently inoperable), one unit of ventilator (Russian made; currently inoperable) and one unit of patient monitoring (procured five years ago).

[Laboratory]

The room is equipped with one Russian made standard centrifuge (procured 25 years ago), one hematocrit centrifuge (procured 25 years ago), two water bathes (procured 20 years ago), one freezer (procured 20 years ago), and one draft chamber (procured 20 years ago; currently inoperable).

[Bio-chemistry laboratory]

The laboratory is equipped with one sterilizer, one centrifuge, and one blood analyzer. However, existing equipment, is former Soviet made and has been in use for over 25 years.

[ECG room]

The room is equipped with one ECG unit of former Soviet made, one ECG unit provided 15 years ago under USAID cooperation, and one ultrasound diagnostic equipment procured 13 years ago.

[Gynecology ward]

The neonatal ICU (intensive care unit) room is equipped with one Russian made light therapy unit (procured 20 years ago), and two open infant warmers (procured 20 years ago).

c. Unified Hospital No. 26

Located at the northeast corner of the Absheron peninsula, the facility was opened in 1982. It has 330 beds, and is staffed with 83 doctors and 116 nurses. Annual number of operations performed is 200~250. The hospital provides medical services covering approximately 100,000 residents in the entire northeast of the Absheron peninsula. During the summer time, however, the number of people in this part of the peninsula to be roughly double due to taking summer vacation by Baku residents.

Facilities: A reanimation room is located on the first floor of the main building, comprising three rooms with two beds each and two rooms with three beds each. Total bed number is 12. The laboratory is located on the first floor of the adjacent polyclinic.

Medical equipment:

[Reanimation room]

The reanimation room has five rooms containing a total of 12 beds. These, however, are not fitted with either ventilators or defibrillator.

[Laboratory]

This is fitted with only two centrifuges, one water bath, and test tube/flask equipment.

[Neonatal Room]

The neonatal room is fitted with only cots. It has no infant warmer or light therapy equipment.

d. Republican Neurosurgery Hospital

This facility is located about 30 minutes by vehicle to the east of central area of Baku. It is the only neurosurgical hospital in Azerbaijan. Bed number is 250, and the hospital is staffed with 81 doctors and 215 nurses. Other staffs include x-ray and MRI (magnetic resource imaging) technicians, etc. Total staff including the adjacent polyclinic is around 500. Number of operations performed annually is approximately 2,000.

Facilities: A reanimation room with 10 beds is located on the fifth floor of the main building. There is also a laboratory on the same floor that carries out various type of testing. In addition, there are an ECG room and MRI room in main building.

Medical equipment:

[Reanimation room]

The reanimation room is a large room containing 10 beds. Existing equipment are only 20-year old five units of Soviet-made ventilators.

[Laboratory]

The laboratory room is equipped with two distillers (one made in Iran three years ago, and one manufactured in the USA), one centrifuge (made in the Soviet Union 20 years ago), one weighing scale (procured 23 years before), one hemoglobin meter (procured 20 years before), and one microscope.

[Radiation room]

It consists of one unit of German made radiating equipment that has been in use for over 20 years.

[ECG room]

It consists of one ECG unit manufactured in Japan (procured in 2007) and one

unit of Italian-made.

[MRI room]

It consists of German made MRI equipment procured two years ago.

3) Current status of the emergency service staff training center

The existing training center contains an EMS as well on its premises. With the aim of upgrading emergency medical techniques, training is carried out at the center once every five years for all emergency service staffs (approximately 2,400 at present). Training is carried out under a Ministry of Health program (National Doctor Training University), and targeted emergency service staffs receive between one and two months of training in anesthetics and reanimation. Theory and classroom lessons are taught at the university, while practical training is carried out at the existing training center. At present, however, training equipment is lacking or deteriorated (for example, there is only one human model for practical exercise sessions), and thorough training is accordingly not possible. Such conditions force trainees to use each body, and train the operation technology for equipment and devices during practical training sessions, which needless to say is an unsafe training environment.

(2) Equipment plan

1) Requested equipment

Requested equipment can be broadly categorized into (i) ambulance car and ambulance car mounted equipment (equipment nos. 1~15), (ii) laboratory room medical equipment (equipment nos. 16~21) and (iii) reanimation equipment for major hospitals accepting emergency patients (equipment nos. 21~23). A list of requested equipment is shown below.

Table 2 Requested equipment list

No.	Equipment name	Q'ty	Category
Component 1 Vehicle for emergency patient transportation			
1	Ambulance car	30	Ambulance car and medical equipment
Component 2 Equipment for ambulance cars			
2	Portable patient monitor (including ECG, HR, Resp., SpO2, Temp and NIBP)	30	Ambulance car and medical equipment
3	Portable defibrillator with monitor	30	
4	ECG	30	
5	Stretcher	30	
6	Syringe infusion pump	30	
7	Gluco-meter	30	
8	Portable suction pump	30	
9	Portable ventilator	30	
10	Transport infant warmer	30	
11	Back board set with air cushion	30	
12	Pulse oximeter	30	
13	Intubation set	30	
14	Laryngoscope set (3 sizes)	30	
15	Neck collar (4 sizes)	30	
Component 3 Equipment for ICU of following emergency patient transfer major four Hospitals (1) Baku City Clinical Hospital No. 3 (2) Unified Hospital No. 26 (Mardakian Hospital) (3) Republican Neurosurgery Hospital (4) Baku City Clinical Hospital No. 6			
16	Blood gas analyzer	4	Laboratory equipment
17	Electrolyte analyzer	4	
18	Blood cell counter	4	
19	Coagulometer	4	
20	Glucose analyzer	4	
21	Biochemical analyzer	4	
22	ECG (12ch)	4	
23	Patient monitor for ICU beds (including ECG, HR, Resp., SpO2, Temp and NIBP)	24	ICU (Reanimation room)
24	Ventilator for ICU	12	
25	Infusion pump	48	
26	Suction pump for ICU	24	
27	Fiberscope and accessories	4	
28	Defibrillator with ECG monitor	4	
29	Infant warmer	4	
30	Fetal doppler	4	

a. Study on requested equipment

The table below indicates intended equipment purpose.

Table 3 Intended purpose of requested equipment

No.	Equipment name	Intended purpose
Component 1 Vehicle for emergency patient transportation		
1	Ambulance car	For transferring of medical staff, patients to hospital and to house
Component 2 Equipment for ambulance cars		
2	Portable patient monitor (including ECG, HR, Resp., SpO ₂ , Temp and NIBP)	For checking patient condition at patient house and during transportation to hospital
3	Portable defibrillator with monitor	Recovery from fibrillation
4	ECG	For monitoring heart activities by electric potential
5	Stretcher	Transfer cart for injured patient
6	Syringe infusion pump	Intravenous drip infusion by syringe with high accuracy
7	Gluco-meter	For monitoring blood glucose level
8	Portable suction pump	Evacuation device for bile or saliva
9	Portable ventilator	Respiration support for disability spontaneous respiration patient
10	Transport infant warmer	For protection of low temperature neonatal
11	Back board set with air cushion	Fixing devices for injured of spinal cord patient
12	Pulse oximeter	For monitoring and measuring of blood oxygen saturation
13	Intubation set	Maintenance device of a patient airway
14	Laryngoscope set (3 sizes)	Maintenance device for glottis
15	Neck collar (4 sizes)	Fixing device for jaw and endite
Component 3 Equipment for ICU of following emergency patient transfer to major four Hospitals (1) Baku City Clinical Hospital No. 3 (2) Unified Hospital No. 26 (Mardakian Hospital) (3) Republican Neurosurgery Hospital (4) Baku City Clinical Hospital No. 6		
16	Blood gas analyzer	For measuring blood O ₂ , CO ₂ and pH, etc
17	Electrolyte analyzer	For Measuring blood Na ⁺ , Cl ⁺ and K ⁺ etc
18	Blood cell counter	For counting blood WBC, RBC, HCT, etc
19	Coagulometer	For analyzing coagulation factors
20	Glucose analyzer	For measuring blood glucose
21	Biochemical analyzer	For measuring components of blood specimen
22	ECG (12ch)	For monitoring heart activities by electric potential
23	Patient monitor for ICU beds (including ECG, HR, Resp., SpO ₂ , Temp and NIBP)	For checking patient condition
24	Ventilator for ICU	For respiration support disability spontaneous respiration patient
25	Infusion pump	For automated intravenous drip infusion
26	Suction pump for ICU	Evacuation device for bile or saliva
27	Fiberscope and accessories	Video monitoring device into broncho and gastro
28	Defibrillator with ECG monitor	Recovery from fibrillation
29	Infant warmerr	For protection low temperature neonatal
30	Fetal doppler	For monitoring fetal cardiac rate

With the exception of few portion of requested equipment, almost all requested equipment are in line with intended purpose of emergency medical services.

In the case of ambulance cars and mounted equipment, this has been placed outside the scope of the Project. The reason for this is that the presidential decree has issued a directive calling for 150 ambulances and accompanying equipment in order to improve both the quality and quantity of emergency medical services available to the metropolitan area population.

Specifically in the case of the requested equipment shown below, this is either allocated to another facility than that requested or eliminated from the Project scope due to: (i) utilization of other equipment which has similar function, and (ii) an appropriately corresponding medical department or ward is not present in the targeted facility.

[Equipment No. 6: Syringe infusion pump]

The syringe pump injects tiny amounts (several ml) of solution into the patient over several hours. Equipment design is such that the syringe piston component is slowly forced out over time. The device is generally used for transfusions to newborn infants. It is not suitable, however, for use in locations subject to vibration.

Under the original request from the Government Azerbaijan, the syringe pump is intended to be mounted in ambulance cars. However, use of the device is not possible during patient transport due to vehicle vibration. Accordingly, the syringe pump is to be eliminated from the list of equipment for ambulance car mounting. Instead, it is to be provided as reanimation equipment to hospitals with gynecology departments caring for newborn infants.

[Equipment No. 29: Infant warmer] and [equipment No. 30: Fetal Doppler]

This equipment is used to care for underweight newborn infants as well as to monitor fetus heartbeat. It will not be provided to the Republican Neurosurgery Hospital which has no gynecology department.

b. Study on quantities of equipment

[Ambulance cars and mounted equipment]

As a presidential decree has already called for 150 ambulances and sets of mounted equipment, this has to be outside the scope of the Project.

[Laboratory room equipment]

Current equipment contained within laboratory rooms in the targeted hospitals are of former Soviet manufacture, and are 20~25 years old and in serious deterioration condition.

Furthermore, basic equipment such as blood cell counters, etc. is lacking. As a result, much time is required for laboratory testing, and in many cases accurate data cannot be obtained. Accordingly, it is necessary to replace the obsolete equipment and to provide new equipment where it is essential. Under the Project, the minimal necessary quantities of equipment confirmed as essential to examination procedures are to be provided.

[Hospital reanimation room]

In the case of three emergency hospitals except the Republican Neurosurgery Hospital, patients are usually released to a general wards after about two days of emergency surgery or treatment. In the case of the Republican Neurosurgery Hospital, the period of post treatment and monitoring for emergency patients is approximately seven days and patients are transferred to general wards.

In the case of the Baku City Clinical Hospital No. 3 and the Republican Neurosurgery Hospital, large patient rooms contain 10~11 beds. In the case of the Baku City Clinical Hospital No. 6 and the Unified Hospital No. 26, reanimation rooms are screened off into one-room sections containing 2~3 beds.

Accordingly, quantities of equipment to be supplied for reanimation rooms is determined on the basis of (i) number of patients received, (ii) length of stay, and (iii) number of rooms.

- ECG

This equipment is used to monitor heart activity. It is essential for a hospital reanimation room. Nevertheless, because the usage frequency tends to be low, a minimum number of equipment units are to be supplied under the Project.

- Patient monitor

This equipment is used to monitor the status of serious case patients. The number of units to be provided under the Project is determined by (i) the number of patients accepted into reanimation room, (ii) the average length of patient stay within a reanimation room and (iii) number of beds used per day.

Table 4 Number of patient monitors and patient traffic

Hospital	Patient number/year	Stay		Bed occupation rate /day	Number of reanimation bed	Planned number
		2 days	7 days			
Baku City Clinical Hospital No. 3	3,834	7,668	—	21.01	10	10
Baku City Clinical Hospital No. 6	703	1,406	—	3.85	11	4
Republican Neurosurgery Hospital	255	—	1,785	4.89	10	5
Unified Hospital No. 26	513	1,026	—	2.81	12	3

In the case of the Baku City Clinical Hospital No. 3, the number of beds used per day by emergency patients' averages is 21.01; this exceeds the existing hospital capacity of 10 beds. As a result, the Baku City Clinical Hospital No. 3 limits the amount of patient time in a bed in the reanimation room to one day. When patient clinic time exceeds this limit, they are then transferred to a general ward of the hospital. Accordingly, as the reanimation room beds (10) are used at full capacity in the case of the Baku City Clinical Hospital No. 3, an additional total of 10 beds are to be provided under the Project.

- Ventilator

In light of the fact that approximately half of all emergency patients transported to the targeted hospitals are incapable of breathing on their own, therefore the number of ventilators to be provided under the Project is one-half the number (bed occupation rate /day) as indicated in the above table.

- Infusion pump

Many patients receive intravenous drip treatment via infusion pump after surgery; therefore this equipment is to be provided in the same number equivalent to the number of available beds per day (as indicated in the above table).

- Suction pump

This equipment is applied to patients whose breathing passage is blocked by phlegm, etc. as a standard procedure to prevent suffocation. However, because use time and use frequency are low, a minimally required one unit per target hospital is to be provided under the Project.

- Fiberscope

This equipment is applied to identifying foreign matter in the bronchial tubes or stomach. As this equipment cannot be simultaneously used for multiple patients, the minimum requirement of one unit per respective hospital is planned.

- Defibrillator with ECG monitor

This equipment is used to revive patient ventricular fibrillation, and frequency of its use is not high. The minimum requirement of one unit per respective hospital is planned.

- Infant Warmer

This equipment serves to enable an infant to recover from low body temperature. It will accordingly be deployed to the targeted hospitals under the Project with the exception of the Republican Neurosurgery Hospital, which has no newborn nursery. Number of equipment will be delivered in accordance with the number of existing newborn nursery rooms in the targeted hospitals. Specifically, this will be two units in the Baku City Clinical Hospital No. 3 and one unit respectively for the Baku City Clinical Hospital No. 6 and the Unified Hospital No. 26.

- Fetal doppler

This equipment is used to observe the fetus heartbeat, and one unit each is to be delivered to the Baku City Clinical Hospital No. 3, the Baku City Clinical Hospital No. 6 and the Unified Hospital No. 26, all of which have a department of gynecology.

c. Study on equipment for emergency medical staffs

[Content of equipment]

As discussed earlier, there is almost no training equipment at existing facilities. Accordingly, the following training equipment is to be provided under the Project. Specific equipment items and intended purpose is as described below.

Table 5 Training equipment for emergency service staffs

Equipment name	Intended purpose
CPR model (Adult)	For training in cardiopulmonary resuscitation by adult model
CPR model (Child)	For training in cardiopulmonary resuscitation by child model
CPR model (Infant)	For training in cardiopulmonary resuscitation by infant model
Trauma kit	For training in judgment and care of burn and cutting conditions
Patient monitor	For training in how to use monitor device and judgment of data by patient temp., heart beat/rate, blood pressure data
Defibrillator	For training in usage of defibrillator device and learning of how to treat about fibrillation patient
ECG (12ch)	For training in patient monitoring method& judgment by electric data
Stretcher	Training for how to transfer patient from home to hospital and manipulate of stretcher
Back board set	For training in how to fix the transferred patient board
Splint set	For training in split usage and how to fix on bone fracture
Intubation set	For training in maintenance of a patient airway
Neck collar set	For training in fixing device for jaw and endite

[Quantities of equipment]

Training of doctors and nurses in emergency service staffs is normally carried out during a single session in five groups of 4~6 persons (i.e., a total of 20~30 individuals). One set of training equipment is to be delivered per respective training group, i.e. five sets of training equipment.

The list of training equipment based on the above study is shown below.

Table 6 Design Equipment list

No.	Equipment Name	Project Sites					Total
		Baku City Clinical Hospital No. 3	Baku City Clinical Hospital No. 6	Unified Hospital No. 26	Republican Neurosurgery Hospital	Training Center	
Equipment for major four Hospitals							
1	Blood gas analyzer	1	1	1	1		4
2	Electrolyte analyzer	1	1	1	1		4
3	Blood cell counter	1	1	1	1		4
4	Coagulometer	1	1	1	1		4
5	Glucose analyzer	1	1	1	1		4
6	Biochemical analyzer	1	1	1	1		4
7	ECG (12ch)	1	1	1	1		4
8	Patient monitor	10	4	5	3		22
9	Ventilator	5	2	3	2		12
10	Infusion pump	10	4	5	3		22
11	Suction pump	1	1	1	1		4
12	Fiberscope set	1	1	1	1		4
13	Defibrillator	1	1	1	1		4
14	Infant warmer	2	1	1			4
15	Syringe pump	2	1	1			4
16	Fetal doppler	1	1	1			3
Training equipment for emergency service staffs							
17	CPR model (Adult)					5	5
18	CPR model (Child)					5	5
19	CPR model (Infant)					5	5
20	Trauma kit					5	5
21	Patient monitor					5	5
22	Defibrillator					5	5
23	ECG (12ch)					5	5
24	Stretcher					5	5
25	Back board set					5	5
26	Splint set					5	5
27	Intubation set					5	5
28	Neck collar set					5	5

Table 7 Application of the Equipment

	No.	Equipment Name	Q'ty	Specifications	Application
Laboratory equipment	1	Blood gas analyzer	4	Sample type: whole blood, serum, Measured parameter: pH, PCO ₂ , PO ₂	For measuring blood O ₂ , CO ₂ and pH, etc., and determination of respiration condition and basal metabolism
	2	Electrolyte analyzer	4	Sample type: whole blood, serum, plasma, Measured parameter: Na ⁺ , K ⁺ , Cl ⁻	For measuring acid base balance, water retention, potential of plasma lemma in blood, and determination of electrolyte balance
	3	Blood cell counter	4	Sample type: whole blood, serum, Measured parameter: WBC, HGB, HCT, MCV, MCH	For counting blood WBC, RBC, HCT, etc., and determination of blood condition
	4	Coagulometer	4	Measured parameter: PT, APTT, Fbg, TTO, Hpt, NT, AT-III	For analyzing coagulation factors, and determination of hemophiliac, etc.
	5	Glucose analyzer	4	Sample type: whole blood, serum, urine, Measuring range: 0~999mg/dl	For measuring blood glucose, determination of diabetes, and control dosage
	6	Biochemical analyzer	4	Measured parameter: 25 colorimetric parameters, 3 electrolytes, Sample volume: 10~50_L	For measuring components of blood and urine enzyme, lipid, glucose, etc., determination of body balance
Reanimation equipment	7	ECG (12ch)	4	Portable type, Standard 12 leads, Color LCD display	For measuring the cardiographs, and monitoring the condition of patients
	8	Patient monitor	22	Measuring parameter: ECG, respiration, SPO ₂ , NIBP, temperature, Color LCD display	For checking patient condition by measuring the body temperature, electric potential, oppression, blood pressure, etc.
	9	Ventilator	12	Ventilation control: volume and pressure control, Mode: tidal volume: 50~2,000mL	For respiration support of patients with disability spontaneous respiration
	10	Infusion pump	22	Volume: 3~300 ml/h, Volume setting: 0~9,999 ml, Alarm: air in line, Occlusion, flow error, door open, low battery,	Automated intravenous drip infusion apparatus for assisting patient's insufficient spontaneous breathing
	11	Suction pump	4	Suction power: ~90kPa, Suction volume: 80L/min, Suction bottle: 3.0 L	Evacuation device for bile or saliva
	12	Fiber scope set	4	Composition: bronchoscope, gastroscope, video processor, xenon lamp, TV monitor (color)	Video monitoring device into broncho and gastro
	13	Defibrillator	4	Output energy: 2~270 J, Defibrillation: biphasic, Paddle for adult and child, Color LCD display	For giving a electric shock to patient and recovery from fibrillation
	14	Infant warmer	4	Hood size: 60x100x130~150 mm, Temperature setting: 25~38°C, Mattres	For protection of low temperature of neonatal
	15	Syringe pump	4	Syringe to be used: 10~50 mL, Flow rate selection: 0.1=300 mL, Accuracy: ±3%, Alarm provided (occlusion, low battery, etc.)	For the safety and convenience of intravenous drip infusion, it is available for injecting in small drop and high accuracy.
	16	Fetal doppler	3	Portable type, Ultrasonic frequency: 2.5 MHz, Heart rate detection range: 50~280 bpm	For monitoring heart sound of fetus, and determination of abnormality

Training equipment	17	CPR model (Adult)	5	Type: whole body for adult, Feedback of CPR performance: ventilation volumes, wrong position, pulse check, Material: PVC	For training in cardiopulmonary resuscitation by adult model
	18	CPR model (Child)	5	Type: whole body for child, Feedback of CPR performance: ventilation volumes, wrong position, pulse check, Material: PVC	For training in cardiopulmonary resuscitation by child model
	19	CPR model (Infant)	5	Type: whole body for infant, Feedback of CPR performance: ventilation volumes, wrong position, pulse check, Material: PVC	For training in cardiopulmonary resuscitation by infant model
	20	Trauma kit	5	30 different injure models, Material: PVC	For training in judgment and care of burn and cutting conditions
	21	Patient monitor	5	Measuring parameter: ECG, respiration, SPO2, NIBP, temperature, Color LCD display	For training in how to use monitor device and judgment of data by patient temp., heart beat/rate, blood pressure data
	22	Defibrillator	5	Output energy: 2~270 J, Defibrillation: biphasic, Paddle for adult and child, Color LCD display	For training in usage of defibrillator device and learning of how to treat about fibrillation patient
	23	ECG (12ch)	5	Portable type, Standard 12 leads, Color LCD display	For training in patient monitoring method and judgment by electric data
	24	Stretcher	5	Roll-in type, Max. loading capacity: 180kg, 360° Swivel wheel x 4, Material: aluminum (frame), Mattress	For training in how to transfer patient from home to hospital and manipulate of stretcher
	25	Backboard set	5	L180 x W40 cm, Load capacity: 155 kg, Material: ABS, Heal immobilizer	For training in how to fix the transferred patient board
	26	Splint set	5	L90 x W10 cm, Material: aluminum	For training in split usage and how to fix on bone fracture
	27	Intubation set	5	Laryngoscope for neonatal and adult: Macintosh type, Haemostatic forceps, Emergency scissors	For training in maintenance of patients airway with coma and inebriation conditions.
	28	Neck collar set	5	Free size, Material: plastic	For training of fixing device for jaw & endite

2-2-3 Basic Design drawing

An outline of the reanimation room, laboratory and neonatal nursery facilities for provision and installation of equipment under the Project is given below.

(1) Baku City Clinical Hospital No. 3

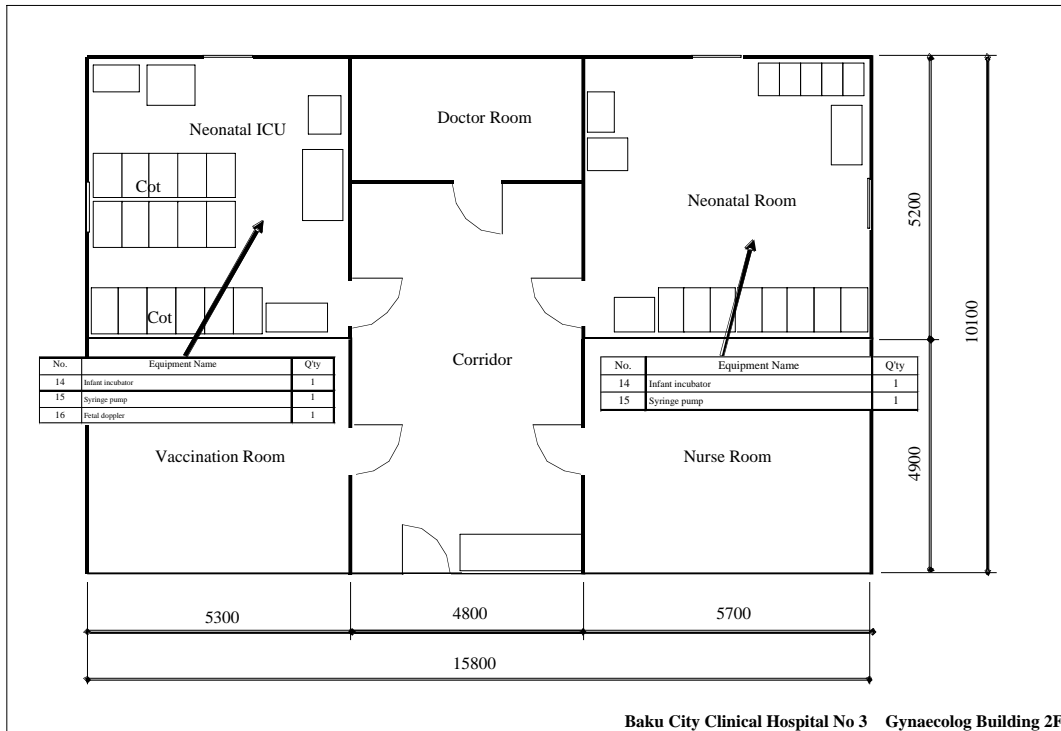
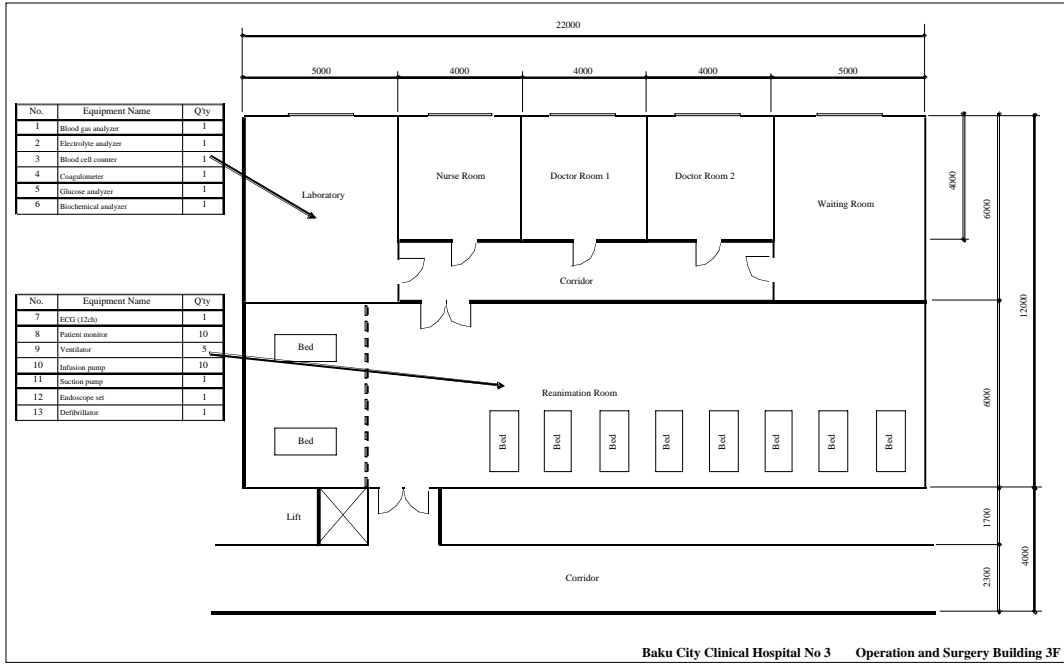
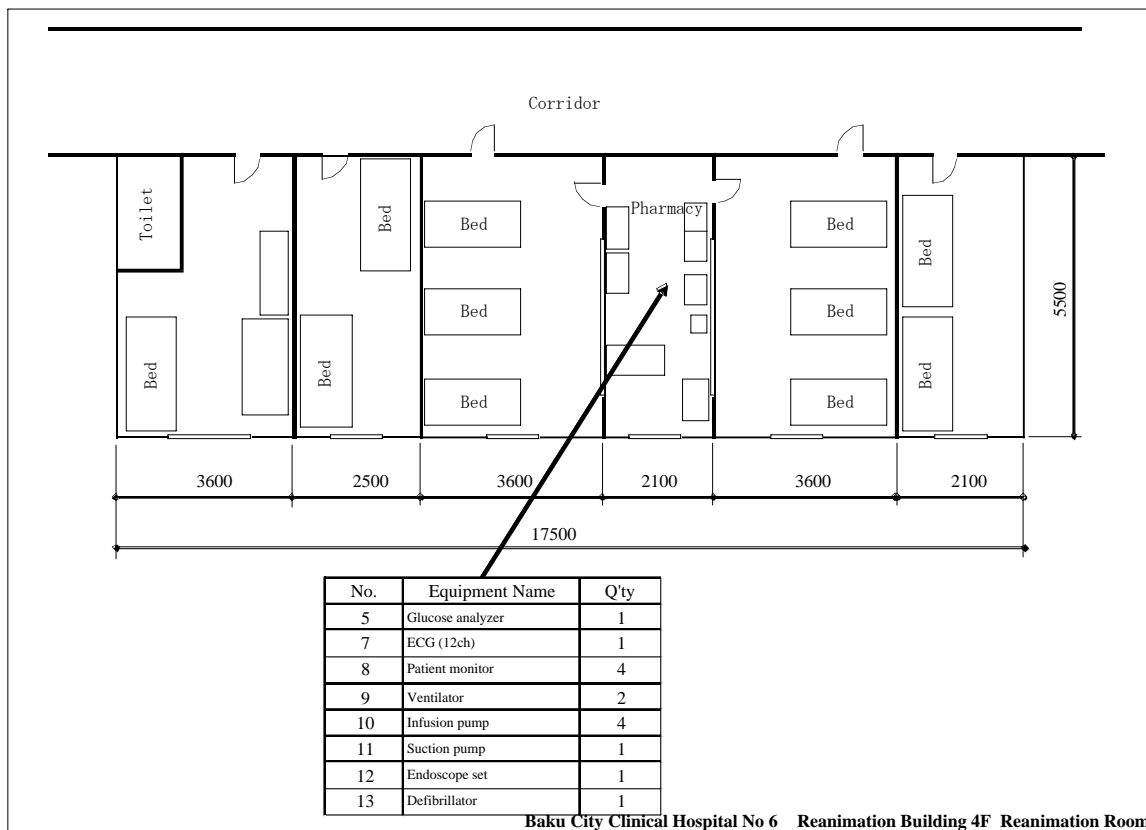
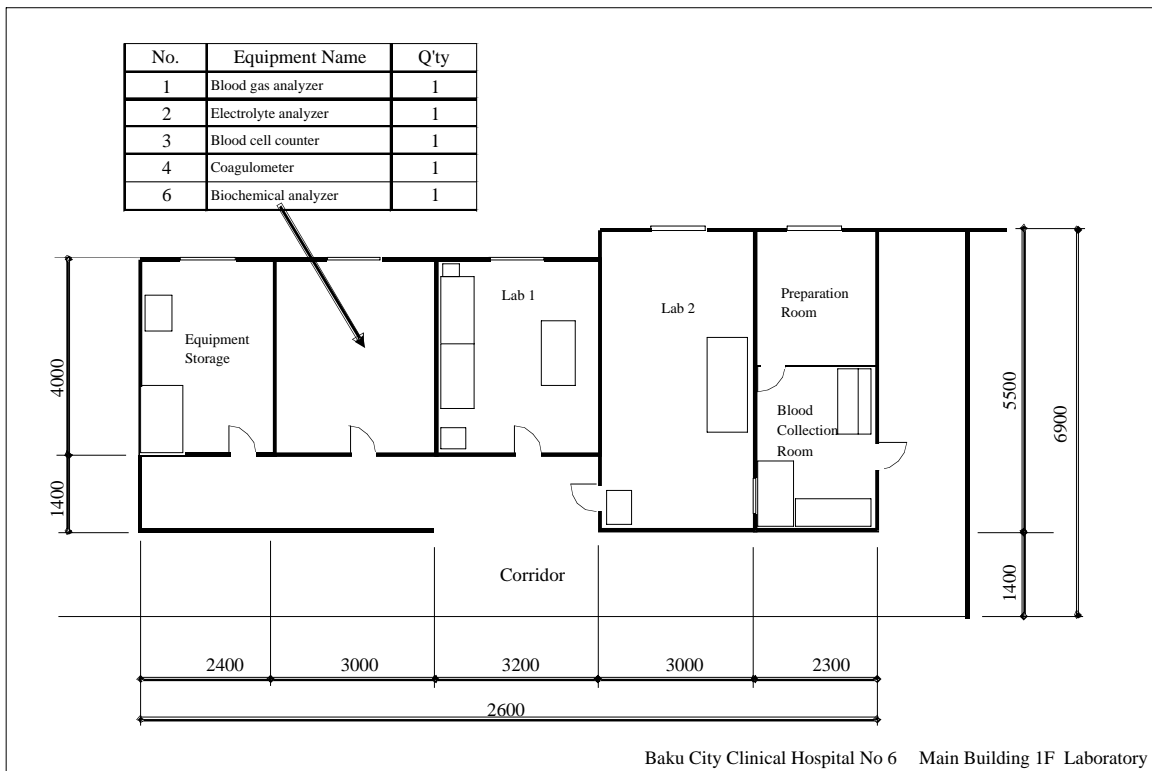


Figure 1 Layout plan - Baku City Clinical Hospital No. 3

(2) **Baku City Clinical Hospital No. 6**



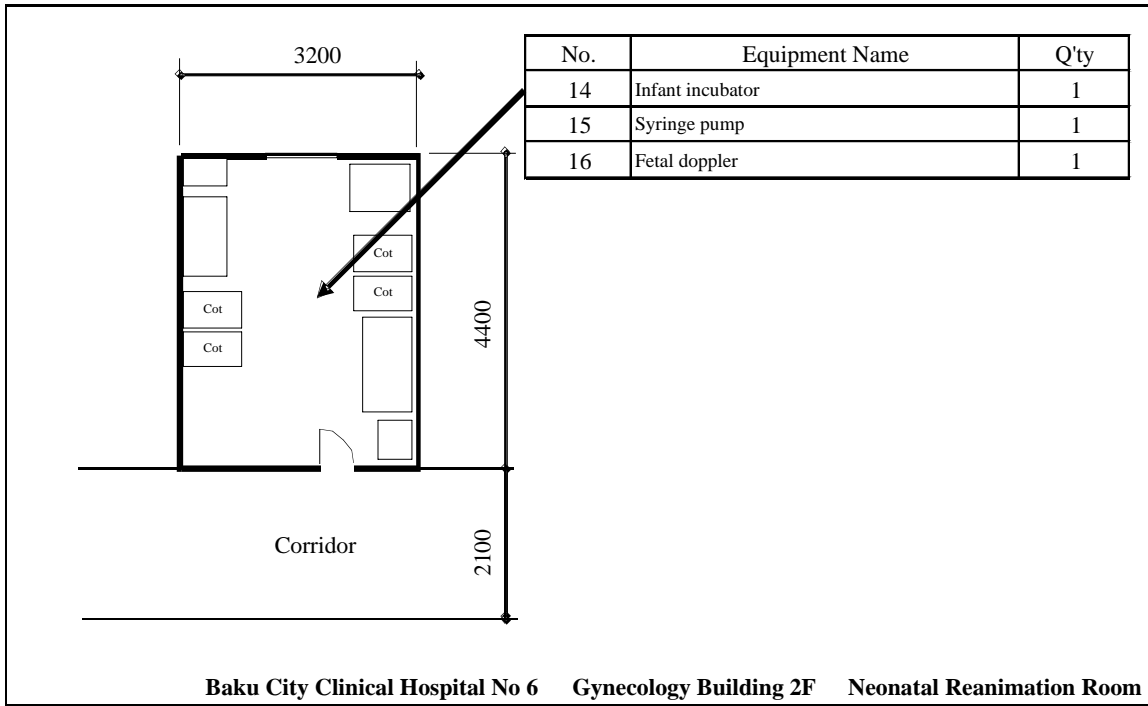
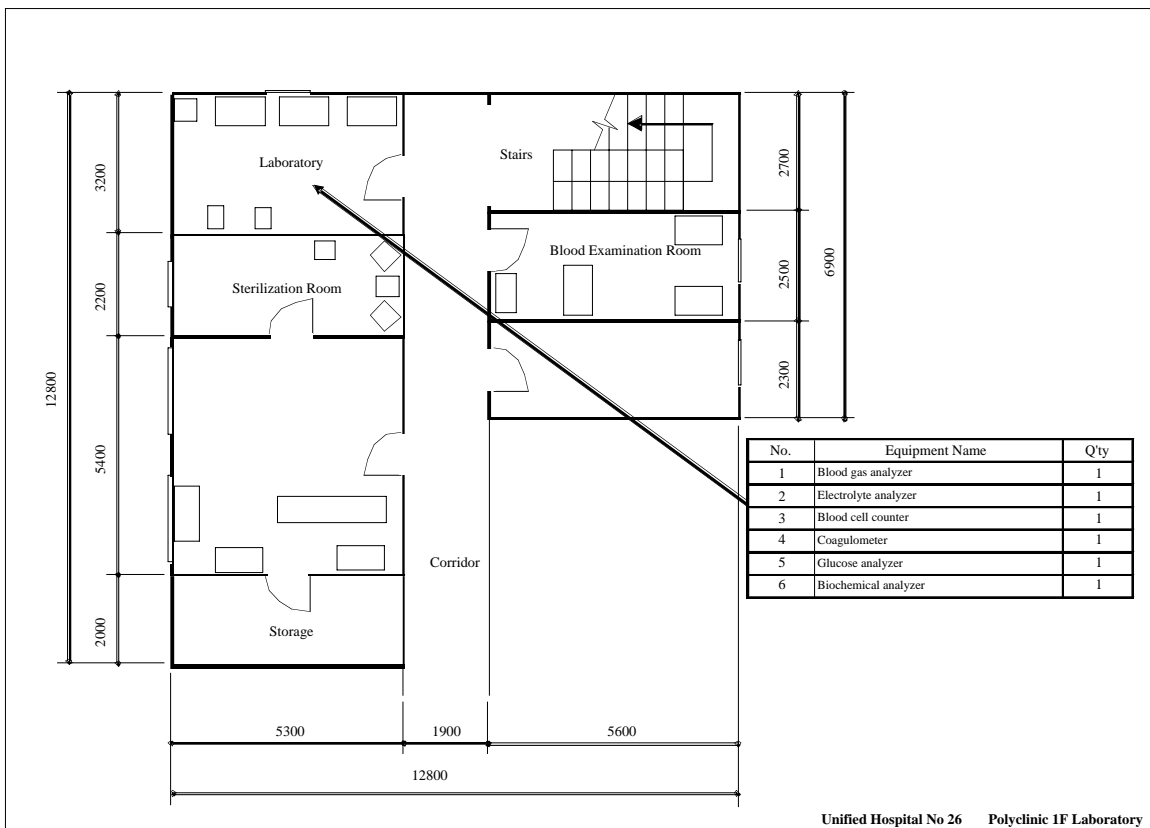
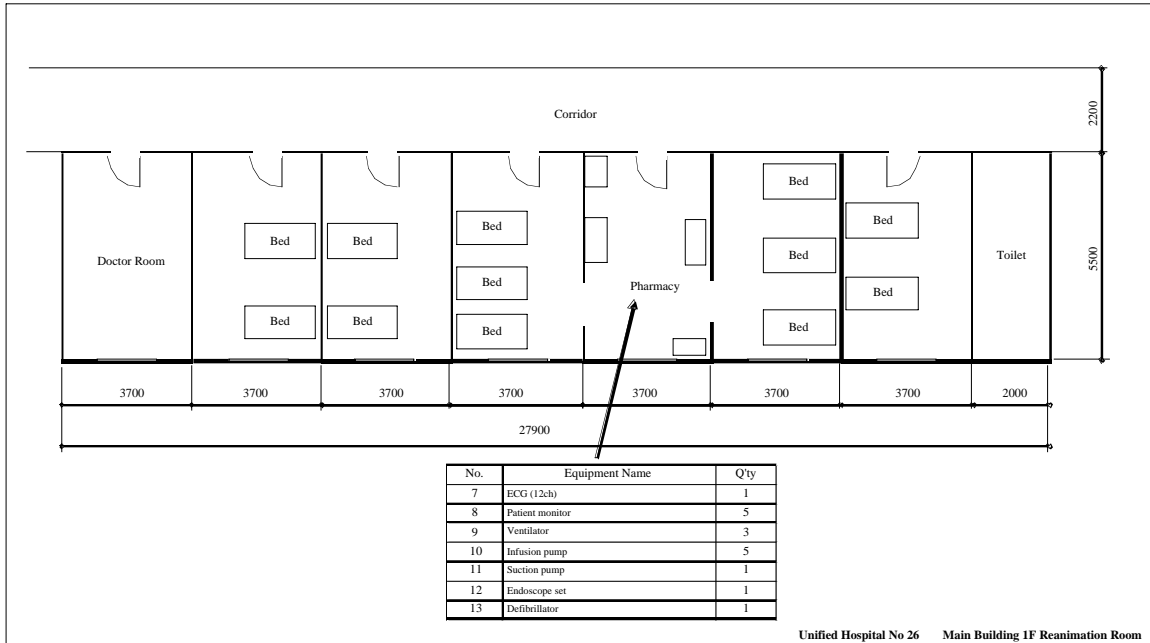


Figure 2 Layout plan - Baku City Clinical Hospital No. 6

(3) Unified Hospital No. 26



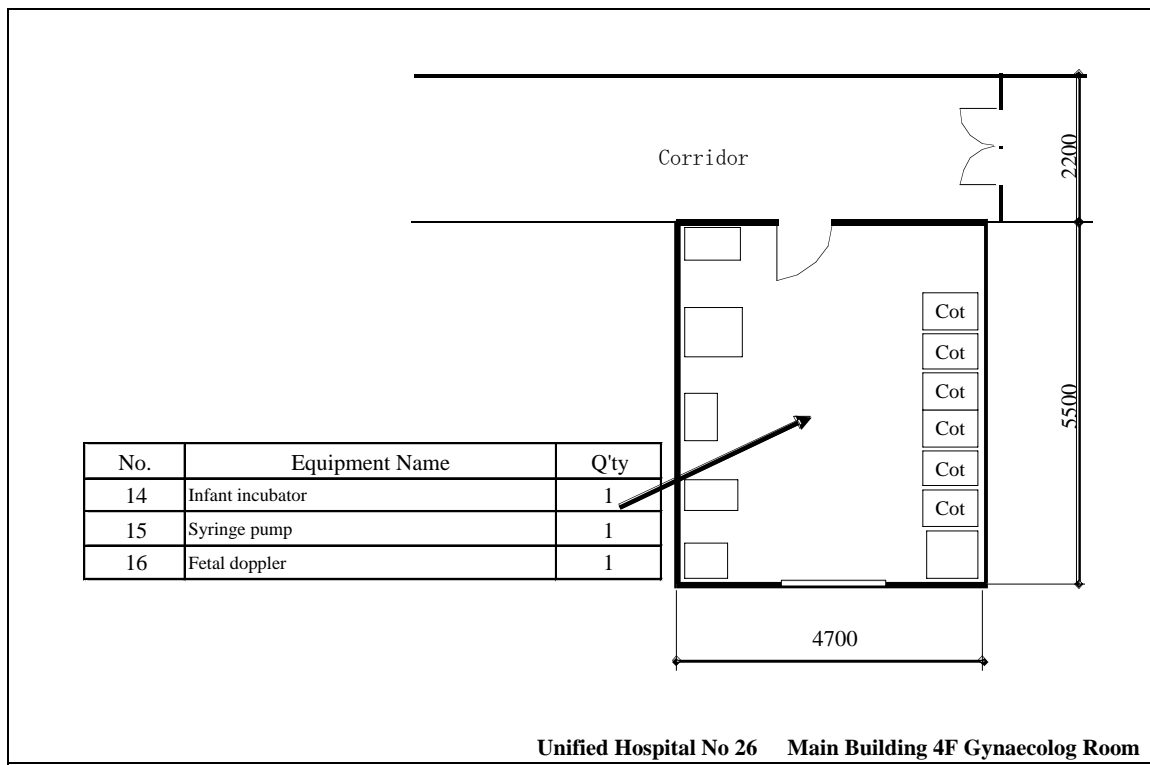


Figure 3 Layout plan - Unified Hospital No. 26

(4) Republican Neurosurgery Hospital

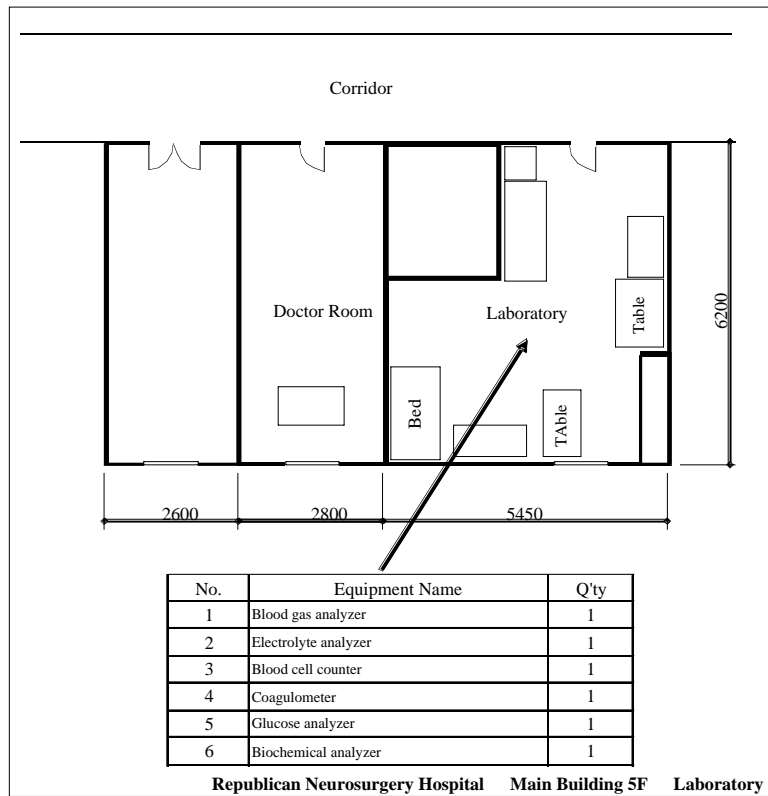
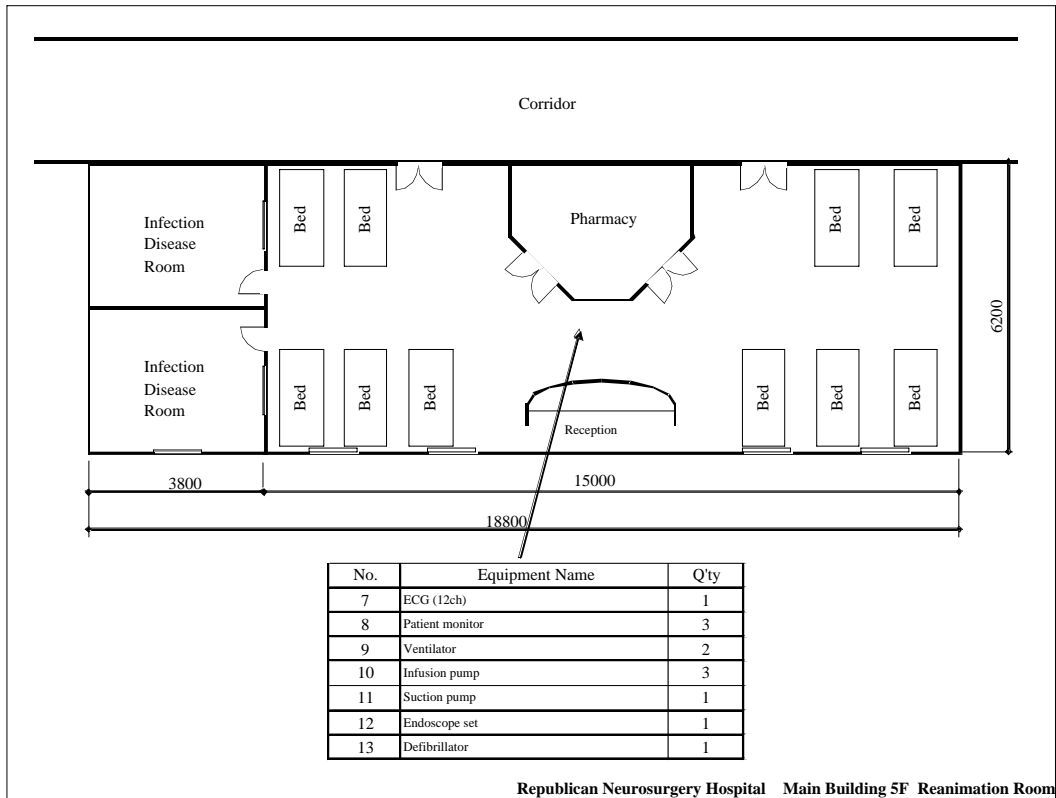


Figure 4 Layout plan - Republican Neurosurgery Hospital

(5) Training Center

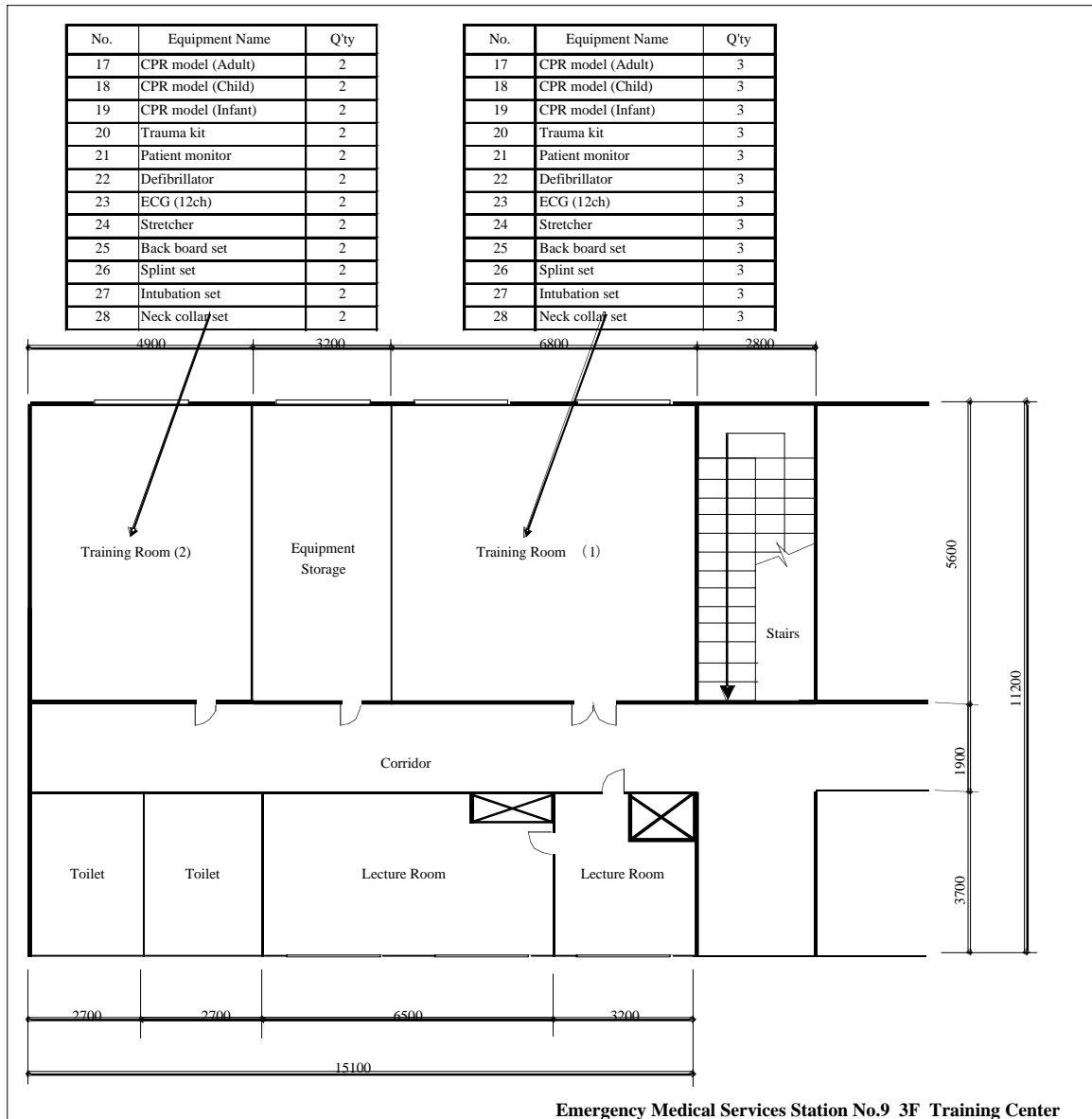


Figure 5 Layout plan - EMS Training Center

2-2-4 Implementation plan

2-2-4-1 Implementation policy

The Project is to be carried out under the Japan's Grant Aid scheme. Therefore, it is important for the smooth implementation of the Project to exchange the opinions among the implementation body on the Azerbaijan side, the Japanese consultant and the Japanese firm (supplier) that performs equipment procurement and installation.

(1) Basic strategy in implementing the works

Following study by the Japanese relevant organizations/personnel, the Project implementation requires a cabinet level approval by the Government of Japan. Following this approval, an Exchange of Notes (E/N) is signed by the two governments, and the implementation begins in line with the following criteria.

- 1) The Project is funded by Japanese citizen taxes, and accordingly will be implemented in line with the Grant Aid scheme as stipulated under the budgetary system of Japan.
- 2) The Government of Azerbaijan will enter into contract with a Japanese consultant to which will be delegated the tasks of tendering procedure support and implementation supervision based on the results of the Basic Design Study on this Project.
- 3) Under the above described cooperation from the consultant, the Government of Azerbaijan will select a Japanese supplier (trading firm or manufacturer) by open tendering. A contract is signed with this entity for comprehensive procurement and installation of equipment under the Project.

(2) Basic procurement strategy

- 1) Suitable sites for temporary storage of procured equipment shipped to Azerbaijan are to be confirmed (either nearby warehouse or a suitable location on the targeted facility grounds), such that theft is prevented and accident-free installation facilitated.
- 2) Unpacking and transport of equipment items is to be done by local labor. Engineers from the respective local marketing agent or from the manufacturer's headquarters are to be dispatched to supervise equipment assembly and installation. Additional supervisory personnel will also be dispatched from Japan to direct the overall work schedule.

(3) Implementation body of the recipient country

The implementation body for the Project is the Ministry of Health, the Government of Azerbaijan.

The targeted EMS training center and four hospitals will be primarily responsible for equipment operation and maintenance.

2-2-4-2 Implementation conditions

It is important that the users of equipment have proper training in equipment operation and maintenance. This is necessary to ensure that equipment fulfills the intended role of improving and strengthening emergency medical services within the Baku metropolitan area (specifically four targeted hospitals, and the EMS training center). Accordingly, user manuals are to accompany the major equipment items procured, and engineers are to be dispatched for initial operation startup as well as follow-up operational guidance and training.

2-2-4-3 Scope of Works

Respective tasks borne by the Japanese side and the Azerbaijan side are to be clearly demarcated to ensure smooth Project coordination and implementation. The demarcation of the works is given in following table.

Table 8 Scope of works

No.	Items	To be covered by Grant Aid	To be covered by recipient side
1.	To secure the place of provision and installation of equipment		—
2.	To procure the emergency medical services equipment	—	
3.	To bear the following commissions to the Japanese bank for banking services based upon the B/A		
	Advising commission of A/P		—
	Payment commission		—
4.	To ensure unloading and custom clearance at port of embarkation and inland transportation		
	Marine (Air, Inland) transportation of the products from Japan to recipient country	—	
	Tax exemption and custom clearance of the products for disembarkation		—
	Inland transportation from the port of disembarkation to the project sites	—	
5.	To accord Japanese nationals, whose services may be required in connection with the supply of the products and services under the Verified contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		—
6.	To maintain and use properly and effectively the equipment provided under the project		—
7.	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment		—

2-2-4-4 Consultant supervision

(1) Consultant tasks

Implementation of the Project will begin following the signing of the E/N between the Government of Japan and the Government of Azerbaijan. A consultant agreement is entered into by the Azerbaijan implementation body and a Japanese consultant is tasked with the following:

1) Detailed design works

The consultant will carry out the following works under detailed design.

- Preparation of tender documents (technical specifications, design drawings, etc.)
- Provide technical data

2) Selection of contractor

After tender documents have been prepared, the consultant supports the implementation body in carrying out the tender opening to select the Japanese supplier under the Project. This support includes:

- Tender notice
- Tender evaluation
- Contract negotiation

(2) Supervision

Basic strategy and points of consideration with regard to supervision of the equipment procurement are as follows:

- 1) In order to ensure smooth delivery and installation of equipment, the consultant will periodically dispatch short-term supervisors who will coordinate construction works, carry out handing-over inspection, and provide guidance in equipment operation.
- 2) At the time of shipment, the consultant will carry out a cross-check inspection of items via a third party agency to ensure the equipment comply with contract.

2-2-4-5 Quality control plan

In order to ensure proper quality of equipment procured by the supplier, the consultant will inspect main equipment items prior to ex-factory shipment. The consultant will also be responsible for confirming a temporary storage site in Azerbaijan for equipment prior to deployment that will prevent degradation of equipment (in containers) due to effects of rain, sun, etc.

2-2-4-6 Procurement plan

There are no manufacturers of medical equipment for examination, treatment, monitoring, etc. in Azerbaijan. Domestic medical-related manufacturers provide primarily beds, gurneys, medicine cabinets, etc. However, there are many local agents that handle emergency medical equipment including many who deal in Japanese manufactured items. Furthermore, these agents provide equipment installation, test operation and operational guidance services, and also supply equipment consumables and spare parts.

As a result, Japanese made equipment to be supplied under the Project is used by staffs of hospitals and emergency medical services in general. Therefore, it is concluded that there will be no problem in maintaining this equipment.

The past prevalence of Russia manufactured equipment is due to relatively inexpensive cost. However, durability is low and equipment is more susceptible to malfunction than Japanese made equipment. In the case of Russia made equipment, spare part procurement requires a lengthy amount of time, and parts may be of poor quality impinging on the intended equipment performance. The Azerbaijan domestic market for medical equipment is limited now. Therefore, Russian made equipment is placed outside the scope of this Project..

2-2-4-7 Operational guidance plan

Most of the existing equipment in the target hospitals under the Project is old Soviet-made equipment. There is a complete absence of Japanese, European and North American equipment. This leads to a conclusion that the staffs using medical equipment in the targeted facilities are not well versed in operational and maintenance procedures with regard to equipment manufactured in Japan, Europe or North America.

Nevertheless field investigation on medical equipment use and maintenance provided by the Japan's Grant Aid project on strengthening the maternity and pediatric hospitals has shown that there are no problems over the long term in the utilization and maintenance of equipment.

Accordingly, under the Project, equipment operational and maintenance guidance will be provided at the outset (i.e., immediately after equipment installation) by personnel dispatched by either the equipment manufacturer or local agent.

2-2-4-8 Soft component plan

The medical equipment to be provided under the Project is aimed at general emergency medical services. Although Russian-made equipment currently at the respective hospitals is generally obsolete, it is being applied to emergency medical services, and their maintenance is adequate.

Accordingly, it is considered that equipment to be provided under the Project will likewise be effectively utilized and maintained. It is concluded that continued technical support will not be necessary with regard to the operation and maintenance of supplied equipment, or to sustain a broader development of the impact created under the Project. Therefore, the soft components are not included under the Project.

2-2-4-9 Implementation schedule

If the Project proceeds to implementation under Japan's Grant Aid scheme, consultant agreement, tender document preparation and approval, tendering for equipment, contract with supplier for equipment procurement will be carried out after signing of the E/N between the two Governments.

(1) Consultant agreement

A Japanese consultant will enter into contract with the Ministry of Health to carry out detailed design, implementation design and supervision under the Project. This agreement is subject to verification by the Government of Japan..

(2) Tender document preparation and approval

After the consultant agreement is verified, the consultant proceeds with detailed design based on the Report on the Basic Design Study, and prepares tender documents and drawings. In the case of equipment specifications drafted during the basic design stage, these are reviewed in terms of any changes within Azerbaijan that would affect the Project, as well as confirming whether the originally envisioned equipment items are still being manufactured, etc. Specifications are to accordingly be modified where necessary.

After tender documents and drawings have been drafted, these are to be presented and explained to the Ministry of Health for its approval.

(3) Tendering and contracting

After approval of tender documents, parties interested in tendering are to be invited within Japan by means of tender notice in a generally circulated newspaper in Japan. Interested parties are briefed on the Project and provided with the requisite tender documents. After issuing tender documents, a 45-day period is allocated to interested parties for estimating the cost of equipment procurement. Interested parties are then assembled for tender opening on the Project. The tendering process entails an examination of technical documentation submitted by tenderers. Only those tenderers that pass this technical review are eligible for tendering amount evaluation. The lowest tenderer is subsequently nominated for contract negotiation.

If negotiation goes smoothly, the Ministry of Health enters into a contract with the nominated supplier for procurement of equipment under the Project. The foregoing procedures are anticipated to require 4 months.

(4) Equipment procurement

After verification of the supplier's contract by the Government of Japan, the supplier begins equipment procurement which is supervised by the consultant. The equipment procurement process is expected to take 7 months

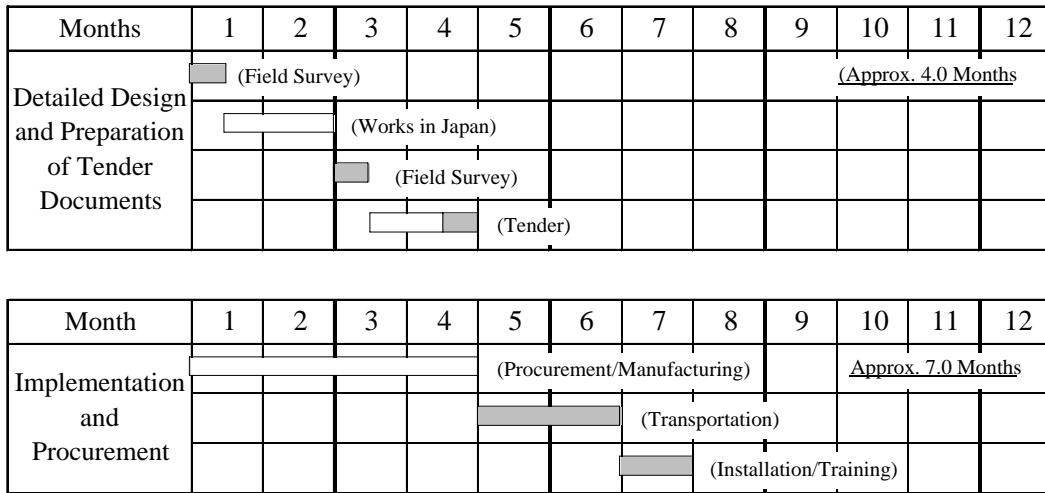


Figure 6 Project implementation schedule

2-3 Obligations of the recipient country

The demarcation between the Japanese and Azerbaijan sides under the Project is as described in Section 2-2-4-3. Specifically, obligations of the Government of Azerbaijan are shown below.

(1) Securing the equipment installation locations

The Azerbaijan side is responsible for securing the locations for equipment installation at existing facilities prior to the actual delivery of equipment on site. In particular, this applies to prior completion of improvement construction works at No. 3 Municipal Clinical Hospital and No. 6 Municipal Clinical Hospital.

(2) Operation and maintenance

It is necessary that the Government of Azerbaijan allocates the necessary personnel and operational and maintenance funding to ensure the effective utilization and upkeep of the equipment to be procured under the Japan's Grant Aid.

(3) Exemption from import tax and other taxes

The Government of Azerbaijan will exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the Azerbaijan with respect to the supply of the products and services under the verified contracts on the Project.

(4) Banking arrangement (B/A)

After signing the E/N between the Government of Japan and Government of Azerbaijan, it is necessary for the latter to enter into a B/A with a Japanese bank including opening an account.

(5) Authorization to pay (A/P)

The Government of Azerbaijan will have to pay an A/P notification commission as well as a payment commission to the bank with which it has entered into a B/A.

(6) Facilitating entering, exiting and staying in the country

The Government of Azerbaijan must take the necessary measures to facilitate the entry, exit and stay of Japanese nationals assigned to duties based on the verified contracts on the Project.

2-4 Project operation plan

(1) Personnel plan

Routine works at the respective hospitals and training center include (i) examination, treatment and monitoring of emergency patients in the case of the former, and (ii) training of emergency service staff in the case of the latter. Accordingly, it will not be necessary to deploy or hire any new personnel in order to effectively utilize the equipment to be provided under the Project.

(2) Operation and maintenance plan

The medical staffs at laboratories and reanimation rooms in target hospitals will operate and maintain the equipment provided by the Project. Laboratory technicians (10~10 staffs in each hospital) have 5 - 10 years experience, thus they have skill and knowledge of inspection technique and equipment operation. In addition, medical staffs at reanimation rooms hold license of physician or nurse, who have sufficient skill and knowledge for the Equipment.

Training equipment will be operated and maintained by trainers at training center. They are senior level personnel for emergency medical services and trainings. Therefore, operation and maintenance of the Equipment to be provided by the Project will be smooth and effective.

2-5 Project cost estimation

2-5-1 Initial cost estimation

(1) Cost borne by the Azerbaijan side

The Project cost for Azerbaijan side if the Project is implemented as a Japan's Grant Aid, is 2,000 Manat. The details are as follows.

Table 9 Project costs borne by the Azerbaijan side

Items	Manat
Cost for Baku City Clinical Hospital No. 3	0
Cost for Unified Hospital No. 26	0
Cost for Republican Neurosurgery Hospital	0
Cost for Baku City Clinical Hospital No. 6	0
Cost for EMS Training Center	0
Commissions of B/A and A/P	2,000
Total	2,000

This cost estimate is provisional and would be further examined by the Government of Japan for the approval of the Grant.

(2) Estimate conditions

- Time of calculation: October 1, 2007
- Exchange rate: US\$ 1 = 120.23 yen
1 Manat = 138.7523 yen
- Implementation period: One fiscal year
- Other: The Project is to be implemented under the Japan's Grant Aid scheme

2-5-2 Operation and maintenance cost

The operational costs for the Equipment will be incurred for reagents, printer paper, electricity, water supply, etc. These costs are to be borne by the respective hospital and the EMS. Operation and maintenance costs incurred under the Project are shown below.

Table 10 Breakdown of the estimated operation and maintenance cost

Equipment List		Chemical	Paper	Electricity		Water Supply		Sub Total	Operation Hour	Sub Total	Baku City Clinical Hospital No 3	Baku City Clinical Hospital No 6	Unified Hospital No 26	Republican Neurosurgery Hospital
No.	Equipment Name	Yen	Yen	W	Yen	L	Yen							
Equipment for ICU of following emergency patient transfer major four Hospitals														
1.	Blood gas analyzer	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
2.	Electrolyte analyzer	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
3.	Blood cell counter	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
4.	Coagulometer	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
5.	Glucose analyzer	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
6.	Biochemical analyzer	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
7.	ECCG (12ch)		20	50	0		0	20	0	2	15,655	2,871	2,095	3,644
8.	Patient monitor			50	0		0	0	12	5	38,304	7,023	5,125	8,917
9.	Ventilator			200	2	5	0	2	12	26	197,900	36,287	26,480	46,068
10.	Infusion pump			50	0		0	0	12	5	38,304	7,023	5,125	8,917
11.	Suction pump			200	2	5	0	2	0	0	1,649	302	221	384
12.	Fiberscope set	100		500	4	5	0	105	0	10	80,244	14,714	10,737	18,680
13.	Defibrillator	10	10	50	0		0	20	0	0	157	29	21	36
14.	Infant warmer			50	0	5	0	1	12	11	82,990	15,217	11,104	
15.	Syringe pump			50	0		0	0	12	5	38,304	7,023	5,125	
16.	Fetal doppler	10		30	0		0	10	0	0	786	144	105	
Sub Total											5,615,818	1,029,713	751,412	1,278,863
Training Equipment														
17.	CPR model (Adult)				0		0	0	3,000	0				
18.	CPR model (Child)				0		0	0	3,000	0				
19.	CPR model (Infant)				0		0	0	3,000	0				
20.	Trauma kit				0		0	0	3,000	0				
21.	Patient monitor			50	0		0	0	3,000	1,249				
22.	Defibrillator	10	10	50	0		0	20	3,000	61,249				
23.	ECCG (12ch)		20	50	0		0	20	3,000	61,249				
24.	Stretcher				0		0	0	3,000	0				
25.	Back board set				0		0	0	3,000	0				
26.	Splint set				0		0	0	3,000	0				
27.	Intubation set				0		0	0	3,000	0				
28.	Neck collar set				0		0	0	3,000	0				
Sub Total											123,746			

Table 11 Operation and maintenance cost

(Unit : Manat)

Project Site	EMS	Baku City Clinical Hospital No. 3	Baku City Clinical Hospital No. 6	Unified Hospital No. 26	Republican Neurosurgery Hospital
Budget (2007)	8,738,414	284,779,467	155,321,390	67,949,966	174,321,238
Operation & maintenance cost	892	40,473	7,421	5,515	9,217
Ratio	0.01%	0.01%	0.005%	0.008%	0.005%

The operational costs incurred by the Equipment are exiguity. Therefore, those costs will be secured by each hospital and training center.

2-6 Other relevant issues

The Azerbaijan side should consider the following undertakings for the smooth implementation of the Project.

(1) Implementation of the obligations of Azerbaijan side

The Azerbaijan is planning to renovate the facility of No. 3 Municipal Clinical Hospital that includes reanimation rooms and laboratories. EMS Training Center will be moved from headquarters to 3rd floor of No. 9 Sub-Station. Therefore, the Azerbaijan side is responsible for securing the preparation of equipment installation. In particular, this applies to prior completion of related works at No. 3 Municipal Clinical Hospital and No. 9 Sub-Station.

CHAPTER 3

PROJECT EVALUATION AND RECOMMENDATIONS

Chapter 3 Project evaluation and recommendations

3-1 Project effect

(1) Expected project effect

Impacts and effects expected to be generated by the Project are described below.

Table 12 Project effect

Current status and problem points	Measures within the cooperative project assistance framework	Direct impacts and related improvement effects	Indirect impacts and related improvement effects
<p>Emergency medical service has entered a critical stage with transition to market economy after the independence. Improvement of this sector is accordingly an urgent issue.</p> <p>In particular, laboratory and treatment equipment at major hospitals to which emergency patients are transported is an urgent issue. Because, existing equipment of them is of former Soviet manufacture and has been in use for 15~20 years. This situation makes it difficult to effectively respond to emergency medical service needs.</p>	<p>Patient reanimation equipment is to be procured for the major four emergency hospitals in the Baku metropolitan area (Municipal No. 3 Clinical Hospital, Municipal No. 26 Unified Hospital, Republican Neurosurgery Hospital and No. 6 Clinical Hospital). This is aimed at enhancing the effectiveness of emergency medical service.</p>	<p>At present, laboratory and treatment procedures are done manually due to lack of equipment.</p> <p>Accordingly, providing necessary equipment will:</p> <p>a) Enable 20,000 persons conveyed to the four major hospitals to avail of enhanced emergency medical service (of these, 5,300 persons are hospitalized and 15,000 persons are released after receiving primary emergency treatment).</p> <p>b) Approximately 1,800 medical personnel at the four major hospitals are enabled to provide emergency medical service by means of the equipment provided.</p>	<p>Family members of the approximate 20,000 emergency patients (per year) transported to the four main hospitals are indirect beneficiaries under the Project.</p> <p>This number of family members is estimated at 80,000 persons.</p>
<p>Emergency service staffs receive periodic refresher training on the latest emergency medical technology.</p> <p>However, adequate training equipment has not been deployed to the existing EMS training center. As a result, appropriate training cannot be carried out.</p>	<p>Procurement of equipment to train emergency service staffs in the Baku city EMS.</p> <p>This in order to upgrade both quality and capability of the emergency medical service.</p>	<p>Approximately 1,200 persons of out of the total emergency medical staffs of 2,400 persons are currently receiving training at the training center. This training focuses primarily on doctors.</p> <p>Broader access to this training is constrained by lack of training equipment.</p> <p>Accordingly, by providing necessary equipment in this regard, the other half of 1,200 persons, and the</p>	<p>As a result of the envisioned training and resultant upgrading of emergency service staffs' capability, annually some 400,000 patients and their family members can avail themselves to higher quality emergency medical services.</p>

		future 500 emergency service staffs in the case where the current 133 emergency teams are expanded to 180 teams (amounting to a total of 2,900 persons) can be provided with training and guidance related to quality emergency medical services.	
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The metropolitan area which is targeted under the Project has an officially indicated population of 1.89 million. However, if the influx of refugees is included, the area population is 3.5 million (which accounts for 41% of the nation's total population of 8.5 million). Ultimately, this total population will benefit either directly or indirectly from the Project.

(2) Project achievement indicators

Performance values in fiscal 2006 are applied as a baseline for basic design study, and Project impact is to be assessed in 2011 (two years after start of equipment operation). Specific achievement indicators in this regard are set out below. These indicators are based on official statistical data as issued by the target facilities (four major hospitals, and training center).

- 1) Capacity to accept emergency patients at the four major hospitals is improved.

Availability of patients conveyed to 4 hospitals	20,000	future 500 emergency service staffs in the case where the current 133 emergency teams are expanded to 180 teams (amounting to a total of 2,900 persons) can be provided with training and guidance related to quality emergency medical services.
(of these hospitalized patients)	5,305	

- 2) Increase in number of emergency service staffs receiving additional training

	2006	
No. of trainees	1,200	2,400

3-2 Recommendations

3-2-1 Recommendation to the recipient country

In order that the equipment supplied under the Project is operated efficiently and effectively, it is recommended that special attention be given to the following points.

(1) Ensuring of the undertakings required to the Azerbaijan side

In order to implement the Project successfully, it is essential that the Government of Azerbaijan side appropriately carry out the undertakings required by the recipient country. Specifically, it is important that renovation works for facilities be properly implemented prior to arrival of equipment from Japan on site. In particular this applies to renovation works for the Municipal No. 3 Clinical Hospital and training center, as well as preparatory works (e.g. provision of tables, etc.) for installing equipment at other facilities.

(2) Budget allocation, personnel appointment and initial training (internal training) to ensure appropriate operation and maintenance

There are sufficient personnel available for deployment to the target hospitals and training center under the Project. Furthermore, the users have appropriate skills for the operating equipment provided by the Project. Accordingly, a continuation of the present operational structure and personnel are prerequisites of the Project. It is thus important that respective facilities targeted under the Project effectively maintain their current personnel structure and workforce lineup. Likewise, an appropriate funding allocation system will be necessary in light of the operation and maintenance cost expected to be generated by application of the equipment provided under the Project.

In addition, it will be necessary for staff personnel and emergency service staffs who have received training in equipment usage to pass this training and knowledge to other personnel through internal training and technology transfer.

(3) Daily management of equipment

Although existing equipment at the targeted facilities is old Soviet manufacture, maintenance is being adequately carried out. However, the equipment to be provided under the Project will entail some different points of caution with regard to daily management and maintenance. These must be borne in mind and reflected in daily inspections, maintenance and equipment cleaning in order to discover potential problems at the earliest possible stage and avoid subsequent equipment breakdown or damage.

(4) Disposal of medical waste

Equipment under the Project includes blood-gas analyzer which results in the generation of bodily liquid waste. In many cases, liquid waste is currently disposed of in the same manner as wastewater, which in the long run has potential deleterious impact on the environment. Therefore, it was proposed to the Azerbaijan side during the field work period that the special storage can for the liquid waste be prepared and waste management be consigned to a specialized agent or organization. Accordingly, a prompt response by the Government of Azerbaijan is necessary when the project is implemented.

(5) Linkage with other PHC medical service structures

The present emergency medical service system in Azerbaijan is derived from the former Soviet Union system whereby a doctor boards the ambulance car and travels to the emergency patient's home. Initial treatment is carried out at home, and if necessary, the patient is transported to an emergency hospital for further treatment. Under this system, emergency teams are often called out for relatively minor ailments (for example, number of emergency calls is roughly 10 times that for Japan [on a per-population basis]). Given the rapid increase in population within the metropolitan area, there is concern that there will be an increased burden placed on emergency teams and a proportional increase in the cost of emergency medical service. Accordingly, it is necessary that the Government of Azerbaijan studies the establishment of an integrated emergency medical service that both strengthens PHC (establishing polyclinic hospitals as well as introduces a family physician system) and links the various medical service systems.

3-2-2 Linkage with technical cooperation by other donors

(1) Linkage with other technical cooperation programs

USAID has implemented overseas training for master trainers aimed at upgrading technical capabilities of emergency medical personnel at hospitals. However, the results of training are not in all cases being effectively applied in the work place due to the consuetudinary practices and insufficient follow-up to job site level. Further, the existing emergency service staffs have no problems regarding knowledge and technical ability for implementing the old Soviet style emergency medical service; however, they do not have sufficient expertise in the case of internationally mainstream emergency medical technology. In order to upgrade the quality of emergency medical service, it is accordingly essential that personnel acquire skills in emergency medical technology at an internationally accepted level. In this regard, it is important to consider the dispatch of Japanese experts for dissemination of emergency medical technology aimed at improving emergency medical service.

In addition, linkage has to be made with training courses in Japan regarding emergency medical systems and technology. It is further deemed effective to send concerned personnel to a third

country for training; in this case Turkey which possesses advanced emergency medical services and is both culturally and linguistically akin to Azerbaijan.

(2) Linkage with “Grant Assistance for Grass-Roots Human Security Project”

Many EMS sub-stations and outlets utilize public facilities built as part of original polyclinic hospitals. However, subsequent superannuation of these structures has resulted in cracking of walls and floors, and an overall unsuitable environment as medical facilities. Although the EMS headquarters is pursuing renovation in light of this situation, these efforts have yet to significantly reach the outlet level. It is accordingly deemed highly effective that schemes such as “Grant Assistance for Grass-Roots Human Security Project” be applied from the standpoint of upgrading and strengthening Gizildash outlet [renovation completed] under the No. 15 sub-station and the Turkan outlet [newly constructed] under the No. 18 sub-station).

(3) Linkage with other donors

USAID is carrying out a health care and social development program that includes (i) a PHC improvement program and (ii) a program for emergency medical service in regional areas. Nevertheless, this Japan's Grant Aid Project is the only assistance effort specifically targeting emergency medical service in the metropolitan area. Furthermore, the USAID initiative is scheduled to end in 2008. Accordingly, the Project has a limited direct connection with the efforts by other donors. When considering the overall emergency medical service system for the country, it is necessary to examine utilization of master trainers fostered by USAID program and acceptance to the training center of emergency service staffs from regional areas. Also, it is important to study linkage and strengthening with PHC improvement projects from the standpoint of establishing an integrated emergency medical service.

APPENDICES

Appendices 1 Member of the Study Team

(1) Basic Design field survey

Name	Position	Organization
Mr. Takuya OTSUKA	Leader and Project Coordinator	Senior Program Officer Health Team Project Management Group III Japan International Cooperation Agency (JICA)
Prof. Masayuki SUZUKAWA	Technical Advisor on Emergency Medicine	Professor and Chairman Department of Emergency and Critical Care Medicine Jichi Medical School
Mr. Hiroshi ABO	Project Manager and Research on Critical Care System	System Science Consultants Inc.
Mr. Toshiharu HATA	Equipment Planner	System Science Consultants Inc.
Mr. Ryuichi NISHIYAMA	Procurement and Cost Planner	System Science Consultants Inc.
Mr. Yukichi GOTO	Interpreter on Russia-Japanese	System Science Consultants Inc. (Translation Centre Pioneer)

(2) Explanation on Draft Final Report

Name	Position	Organization
Mr. Shumon YOSHIARA	Leader	Team Leader Health Team Project Management Group III Japan International Cooperation Agency (JICA)
Mr. Hiroshi ABO	Project Manager and Research on Critical Care System	System Science Consultants Inc.
Mr. Toshiharu HATA	Equipment Planner	System Science Consultants Inc.
Mr. Yukichi GOTO	Interpreter on Russia-Japanese	System Science Consultants Inc. (Translation Centre Pioneer)

Appendices 2 Study schedule

(1) Basic Design Field Survey

Date			Leader and Project Coordinator (JICA)	Technical Advisor on Emergency Medicine	Project Manager and Research on Critical Care System	Equipment Planner	Procurement and Cost Planner	Interpreter Russia-Japanese
1	6-May	Sun			Narita to Vienna			Accompany with Project Manager
2	7-May	Mon			Baku city, JICA EXP., International Relations Dept. MOH	←		Accompany with Project Manager
3	8-May	Tue			EMS, No 5 Sub-Station, No 9 Sub-Station, Deputy Minister MOH	←		Accompany with Project Manager
4	9-May	Wed			No 3, No 19, No 15, No 20 Sub-Station, No 20 Branch	←		Accompany with Project Manager
5	10-May	Thu			No 4, No 8 Sub-Station, No 3 Hospital	←		Accompany with Project Manager
6	11-May	Fri			EMS, No 2, No 1, No 6 Sub-Station, International Relations Dept. MOH	EMS, No 2, No 1, No 6, No 7 Sub-Station		Accompany with Project Manager
7	12-May	Sat			No 17 Sub-Station, No 17 Branch, No 16 Branch, Innovation Center	No 17, No 16, No 14, No 12 Sub-Station, No 17, No 16, No 14 Branch		Accompany with Project Manager
8	13-May	Sun			Documentation	←		Accompany with Project Manager
9	14-May	Mon	Narita to Vienna	←	EMS ←	No 13, No 22, No 11 Sub-Station, No 22, No 11 Branch, Baku City Health Head Office	Accompany with Project Manager	
10	15-May	Tue	Baku city, JICA EXP., EOJ	←	←	Innovation Center, EOJ	Accompany with Project Manager	
11	16-May	Wed	MOH, EMS, No 6 Hospital, Doctor Education University	←	←	No 10, No 18 Sub-Station, No 10 Branch, No 26 Hospital	Narita to Vienna Accompany with Project Manager	
12	17-May	Thu	EMS, No 26 Hospital	EMS, No 26 Hospital, No 8 Sub-Station	←	EMS, No 21 Sub-Station	Baku City, EMS, No 21 Sub-Station Accompany with Project Manager	
13	18-May	Fri	Vehicles Base	EMS, Vehicles Base	←	Equipment Agents, Vehicles Base, Transportation Company	← Accompany with Project Manager	
14	19-May	Sat	No 8 Sub-Station	←	←	No 15 Branch	← Accompany with Project Manager	
15	20-May	Sun	Documentation	←	←	←	← Accompany with Project Manager	
16	21-May	Mon	Discussion for MD	←	←	No 20 Branch, Innovation Center	← Accompany with Project Manager	
17	22-May	Tue	Discussion for MD	←	←	Finance Dept.	Equipment Agents, Transportation Company Accompany with Project Manager	
18	23-May	Wed	Discussion for MD, Prime Minister Office, EOJ	Baku to Frankfurt	Discussion for MD, Prime Minister Office, EOJ	Neurosurgery Hospital, EOJ	Innovation Center, Baku Custom Office Accompany with Project Manager	
19	24-May	Thu	Baku to Vienna	Narita	EMS, Information Dept. MOH	Neurosurgery Hospital	Equipment Agents, Ministry of Tax Accompany with Project Manager	
20	25-May	Fri	Narita		EMS, USAID/IMC, Baku City Health Head Office, Finance Dept. MOH	No 6 Hospital	Equipment Agents, Car Dealer Accompany with Project Manager	
21	26-May	Sat			EMS	No 3 Hospital	Car Dealer, Innovation Center Warehouse, Equipment Dealer Accompany with Project Manager	
22	27-May	Sun			Documentation	←	←	Accompany with Project Manager
23	28-May	Mon			Documentation	←	←	Accompany with Project Manager
24	29-May	Tue			EMS, Information Dept. MOH, International Relations Dept. MOH, Deputy Minister	No 26 Hospital	Baku to Vienna Accompany with Project Manager	
25	30-May	Wed			EMS, Information Dept. MOH	Other Hospitals	Narita Accompany with Project Manager	
26	31-May	Thu			Baku to Vienna	←	←	Accompany with Project Manager
27	1-Jun	Fri			Narita	←	←	Accompany with Project Manager

(2) Explanation on Draft Final Report

Date			Team Leader (JICA)	Project Manager and on Critical Care System	Equipment Planner	Interpreter Russia-Japanese
1	26-Nov	Mon	/	Narita to Vienna	←	Accompany with Project Manager
2	27-Nov	Tue		Baku City, EOJ, MOH, EMS	←	Accompany with Project Manager
3	28-Nov	Wed		EMS, No 9 Sub-Station, No 6 Hospital, Neurosurgery Hospital	←	Accompany with Project Manager
4	29-Nov	Thu		EMS, No 26 Hospital, Vehicle Garage, No 3 Hospital	←	Accompany with Project Manager
5	30-Nov	Fri		EMS, IMC, MOH, Reform Center	←	Accompany with Project Manager
6	1-Dec	Sat		MOH	←	Accompany with Project Manager
7	2-Dec	Sun	Narita to Vienna	Documentation	←	Accompany with Project Manager
8	3-Dec	Mon	Baku City, EOJ, MOH Deputy Minister (Discussion for MD)	EOJ, MOH Deputy Minister (Discussion for MD)	←	Accompany with Project Manager
9	4-Dec	Tue	Reform Center, EMS, No 9 (Training Center)	←	←	Accompany with Project Manager
10	5-Dec	Wed	Receive MD signed, Deputy Prime Minister, EOJ	←	←	Accompany with Project Manager
11	6-Dec	Thu	Baku to Vienna	←	←	Accompany with Project Manager
12	7-Dec	Fri	Narita	←	←	Accompany with Project Manager

Appendices 3 List of parties concerned in the recipient country

Cabinet of Minister

Mr. Sharifov Abid	Deputy Prime Minister
Dr. Eng. Nail S. Fataliyev	Coordination of Credits under State Guarantee, Technical Assistance and Grant Department, Head

Ministry of Health

Dr. Beribekov Abbac	First Deputy Minister
Dr. Elsever M. Agayev	Deputy Minister
Dr. Sanan H. Karimov	Deputy Minister
Dr. Samir Abdullayev	International Relations Department, Head
Ms. Kukanova Gusum	International Relations Department, Officer
Dr. Lyudmila Mammadova	Finance Department, Head
Dr. Oktay V. Akhundov	Department of Health Information and Statistics, Director
Dr. Adil Karimov	Medical Service Department, Deputy Head

Innovation and Supply Center

Mr. Ismailov Anar	Innovation and Medical Equipment Department, Head
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Republic Health and Reform Center

Dr. Jeyhun Mammadov	Director
Dr. Tahmina Taghi-zada	Projects' Coordination Department, Head

Baku City General Health Department

Dr. Leila Seidbekova	General Director
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Emergency Medical Service Station

Dr. Mursal Hamidov	Director
Dr. Nagiev Rauf	Sub-Director
Mr. Miradov Ragim	Chief of Engineer (Radio Communication)

Baku City Clinical Hospital No 3

Dr. Akif Abdullaev	Director
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Baku City Clinical Hospital No 6

Dr. Mammadov N. Ibrahim Oglu	Director
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Unified Hospital No 26

Dr. Dr. Kerimov Yuzasif Director

Republican Neurosurgery Hospital

Dr. Dadashov Kabuz Director

Ministry of Excise

Mr. Natig Amirov Deputy Minister

Mr. Aydin Ayvazov Baku City Tax Office, Deputy Director

National Doctor Training University

Dr. Huseynov Huseynaga Principal

USAID/IMC (International Medical Corps)

Dr. Natalya Valeeva Vice Chief

Dr. Harsh Sule Country Director

Embassy of Japan

Mr. Masamitsu Oki Ambassador of Japan

Mr. Tadahiro Abe Former Ambassador of Japan

Mr. Mitsuhiro Kohno First Secretary

JICA

Mr. Kenichi Osugi JICA Expert (ODA Advisor)

Mr. Ruslan M. Mustafev Program Coordinator

Appendices 4 Minutes of Discussions

4-1 Minutes of Discussion during Basic Design field survey

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR IMPROVEMENT OF EMERGENCY
MEDICAL SERVICE IN BAKU CITY
IN THE REPUBLIC OF AZERBAIJAN

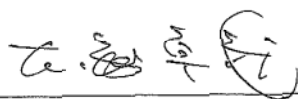
In response to a request from the Government of the Republic of Azerbaijan (hereinafter referred to as "Azerbaijan"), the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of Emergency Medical Service in Baku City (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to the Azerbaijan the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Takuya Otsuka, Senior Program Officer, Health Team, Project Management Group II, Grant Aid Management Department, JICA, and is scheduled to stay in the country from May 7 to May 31, 2007.

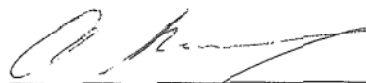
The Team held discussions with the officials concerned of the Government of Azerbaijan and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets.

Baku, May 29, 2007



Mr. Takuya OTSUKA
Leader
Basic Design Study Team
Japan International Cooperation Agency



Mr. Abbas S. VELBEKOV
Deputy Minister
Ministry of Health
Republic of Azerbaijan

ATTACHMENT

1 Objective of the Project

The objective of the Project is to improve the quality and accessibility of emergency service in the Baku Metropolitan Area.

2 Project Sites

The sites of the Project are Emergency Station, Emergency Sub-Stations, Outlets and Hospitals in the Baku Metropolitan Area. The sites' location is shown in Annex-1.

3 Responsible and Implementing Agency

The responsible and implementing agency is the Ministry of Health, Azerbaijan.

4 Items Requested by the Government of Azerbaijan

After discussions with the Team, the items listed in Annex-2 were requested by the Azerbaijani side. JICA will assess the appropriateness of the request and will report the findings to the Government of Japan.

5 Japan's Grant Aid Scheme

The Azerbaijani side understood the Japan's Grant Aid Scheme explained by the Team, as described in Annex-3.

6 Procedure of the Study

6-1 The consultants will proceed to further studies in Azerbaijan until May 31, 2007.

6-2 The Japanese side will assess the necessity and feasibility of the request by the Azerbaijani side from the viewpoint of the Japanese Grant Aid through further analysis in Japan.

6-3 The result of the assessment by the Japanese side will be informed accordingly to the Azerbaijani side.

7 Other Relevant Issues

The Azerbaijani side explained to the Team that the Azerbaijani side proceeded procuring following items by their own fund according to the Presidential Degree No. 1972 on February 20, 2007.

(1) 150 ambulance cars out of 180-200, which is the planned number of ambulance cars to be provided in the Baku Metropolitan Area

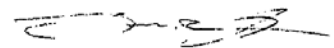
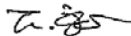
(2) Radio dispatchment systems including radio communication device for Emergency Station, Emergency Sub-Stations, Outlets, Hospitals and ambulance cars

(3) Equipment for ICU of the Center of Clinical Medicine

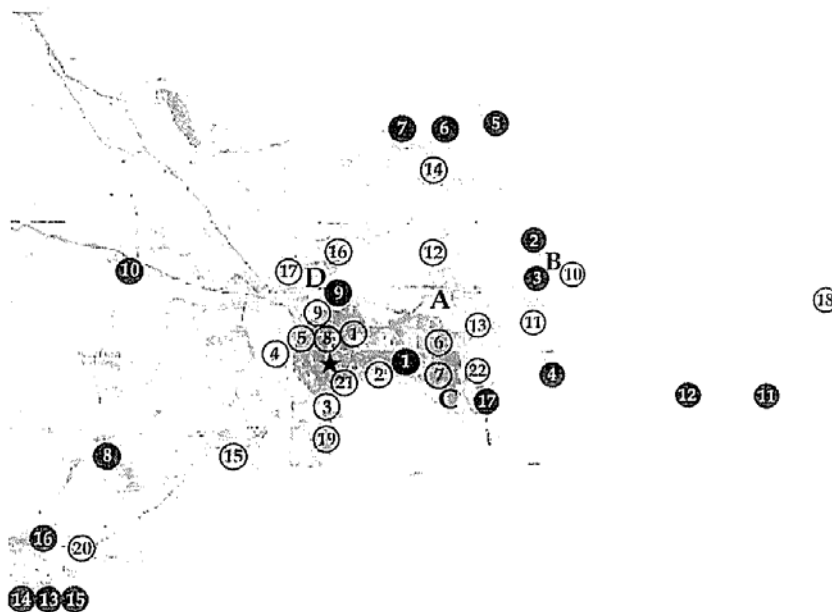
Annex-1 Project Sites

Annex-2 Requested Equipment

Annex-3 Japan's Grant Aid Scheme



Project Sites



Emergency Station, Emergency Sub-Stations and Outlets

Emergency Sub-Station No.	Located District	Affiliated Outlet (No.)	Emergency Sub-Station No.	Located District	Affiliated Outlet (No.)
1	Narimanov	-	15	Garadak	Azans (8)
2	Khatai	-	16	Binagadi	Azadlyg (9)
3	Sabail	-	17	Binagadi	Mushfigabad (10)
4	Yasamal	-	18	Azizbekov	Zira (11)
5	Nasimi	-	19	Sabail	Turkan (12)
6	Nizami	NZS (1)	20	Garadak	Gobustan (13)
7	Khatai	-	21	Sabail	Alyaty (14)
8	Nasimi	-	22	Surakhany	Sangachal (15)
9	Binagadi	-			Umbaky (16)
10	Azizbekov	Buzovna (2)			Zykh (17)
11	Surakhany	Bina (3)			
12	Sabunchi	Govsan (4)			
13	Sabunchi	-			
14	Sabunchi	Biligya (5)			
		Nardaran (6)			
		Pirshagi (7)			

★ Emergency Station
 ○ Emergency Sub-station
 ● Outlet

Hospitals

A	Baku City Clinical Hospital No 3
B	Unified Hospital No 26 (Mardakian Hospital)
C	Republican Neurosurgery Hospital
D	Baku City Clinical Hospital No 6

Requested Equipment

No	Equipment	Qty
Component 1 Vehicle for emergency patient transportation		
1	Ambulance car	30
Component 2 Equipment for ambulance cars		
2	Portable patient monitor (including ECG, HR, Resp., SpO2, Temp. and NIBP)	30
3	Portable defibrillator with monitor	30
4	ECG	30
5	Stretcher	30
6	Syringe infusion pump	30
7	Glucose meter	30
8	Portable suction pump	30
9	Portable ventilator	30
10	Transport infant incubator	30
11	Back board set with air cushion	30
12	Pulse oximeter	30
13	Intubation set	30
14	Laryngoscope set (3 size)	30
15	Neck collar (4 size)	30
Component 3 Equipment for ICU of following emergency patient transfer major four Hospitals (1) Baku City Clinical Hospital No 3 (2) Unified Hospital No 26 (Mardakian Hospital) (3) Republican Neurosurgery Hospital (4) Baku City Clinical Hospital No 6		
16	Blood gas analyzer	4
17	Electrolyte analyzer	4
18	Blood cell counter	
19	Coagulometer	4
20	Glucose analyzer	4
21	Biochemical analyzer	4
22	ECG (12ch)	4
23	Patient monitor for ICU beds (including ECG, HR, Resp., SpO2, Temp. and NIBP) (for 6 beds each Hospital)	24
24	Ventilator for ICU (for 3 set each Hospital)	12
25	Infusion pump (for 12 set each Hospital)	48
26	Suction pump for ICU (for 6 set each Hospital)	24
27	Fiberscope and accessories	4
28	Defibrillator with ECG monitor	4
29	Infant warmer	4
30	Fetal doppler	4

Japan's Grant Aid Scheme

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

1 Grant Aid Procedure

- 1) Japan's Grant Aid Program is executed through the following procedures.

Application

(Request made by a recipient country)

Study

(Basic Design Study conducted by JICA)

Appraisal and Approval

(Appraisal by the Government of Japan and approval by Cabinet)

Determination of Implementation

(The Notes exchanged between the Governments of Japan and the recipient country)

- 2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request. If necessary, JICA send a Preliminary Study Team to the recipient country to confirm the contents of the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

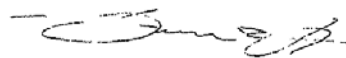
2 Basic Design Study

- 1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- a) confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation;

7. 232



- b) evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from the technical, social and economic points of view;
- c) confirmation of items agreed on by both parties concerning the basic concept of the Project;
- d) preparation of a basic design of the Project; and
- e) estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For the smooth implementation of the Study, JICA uses a consulting firm selected through its own procedure (competitive proposal). The selected firm participates the Study and prepares a report based upon the terms of reference set by JICA.

At the beginning of implementation after the Exchange of Notes, for the services of the Detailed Design and Construction Supervision of the Project, JICA recommends the same consulting firm which participated in the Study to the recipient country, in order to maintain the technical consistency between the Basic Design and Detailed Design as well as to avoid any undue delay caused by the selection of a new consulting firm.

3 Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

- 2) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

- 3) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

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However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability of Japanese taxpayers.

5) Undertakings required to the Government of the recipient country

- a) to secure a lot of land necessary for the construction of the Project and to clear the site;
- b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities outside the site;
- c) to ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant Aid;
- d) to exempt Japanese nationals from customs duties, internal taxes and fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;
- e) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;
- f) to ensure that the facilities constructed and products purchased under the Grant Aid be maintained and used properly and effectively for the Project; and
- g) to bear all the expenses, other than those covered by the Grant Aid, necessary for the Project.

6) "Proper Use"

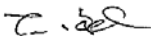
The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign the necessary staff for operation and maintenance of them as well as to bear all the expenses other than those covered by the Grant Aid.


7) "Re-export"

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

8) Banking Arrangement (B/A)

- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.





b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of recipient country or its designated authority.

9) Authorization to Pay (A/P)

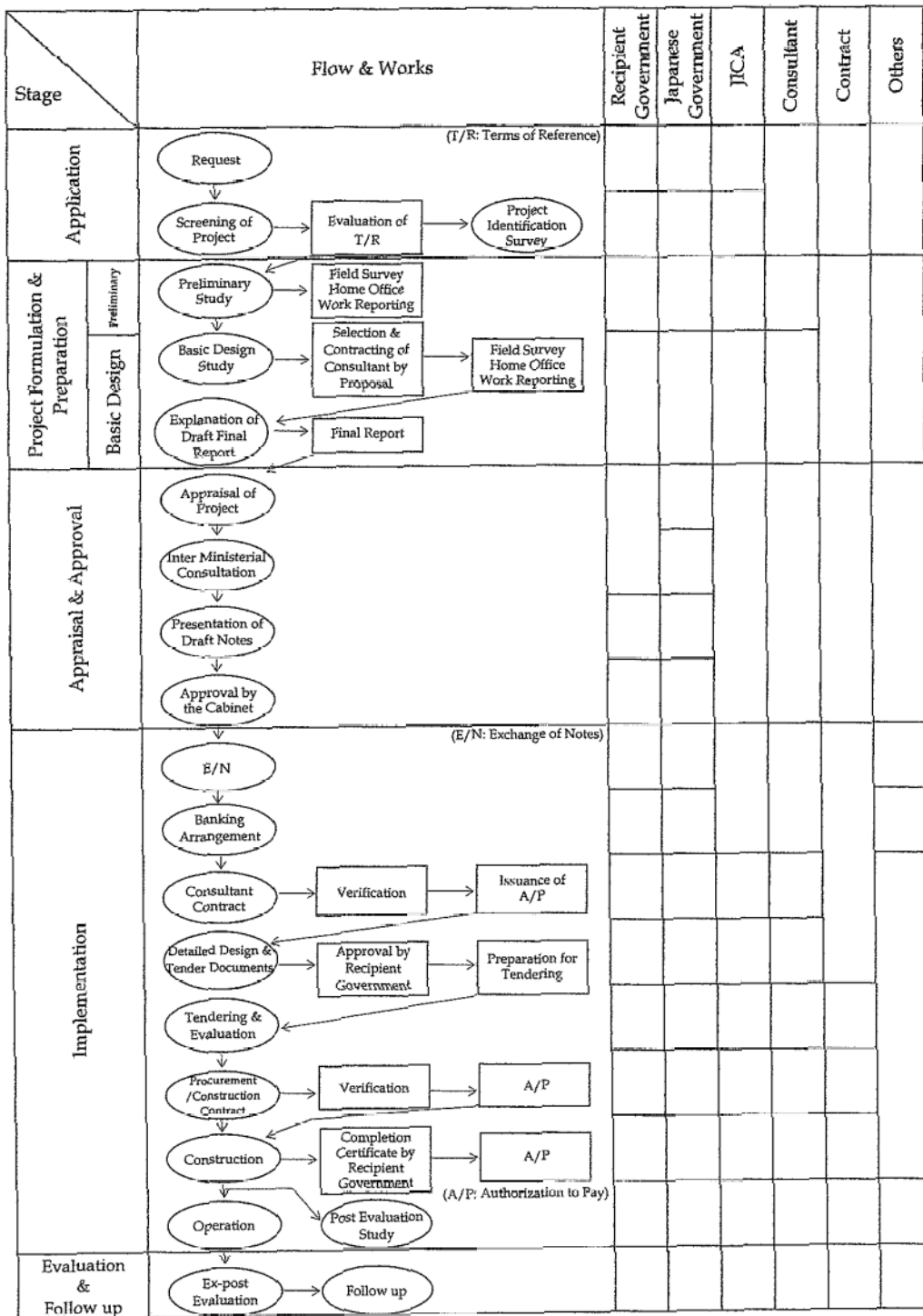
The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commission to the Bank.

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Flow Chart of Japan's Grant Aid Procedures



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Major Undertakings to be Taken by Each Government

No	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
1)	Advising commission of A/P		⊕
2)	Payment commission		⊕
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
1)	Marine (Air) transportation of the products from Japan to the recipient country	⊕	
2)	Tax exemption and custom clearance of the products at the port of disembarkation		⊕
3)	Internal transportation from the port of disembarkation to the project site	(⊕)	(⊕)
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		⊕
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		⊕
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		⊕
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the transportation and installation of the equipment		⊕

4-2 Minutes of Discussion during the explanation on Draft Final Report

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR IMPROVEMENT OF EMERGENCY
MEDICAL EQUIPMENT IN BAKU CITY
IN THE REPUBLIC OF AZERBAIJAN


(EXPLANATION OF THE DRAFT REPORT)

In May 2007, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Basic Design Study Team on the Project for Improvement of Emergency Medical Equipment in Baku City (hereinafter referred to as "the Project"), and through discussions, field surveys, and technical examination of the results in Japan, JICA prepared the draft report of the study.

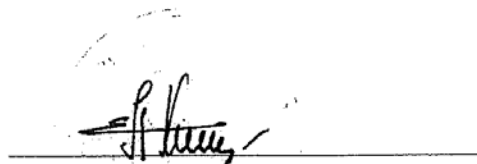
In order to explain and to consult the Government of the Republic of Azerbaijan (hereinafter referred to as "Azerbaijan") on the components of the draft report, JICA sent to Azerbaijan the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Shumon YOSHIARA, Team Director of Health Team, Grant Aid Management Department, JICA, from Nov 26 to Dec 6, 2007.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Baku, December 4, 2007



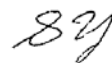
Mr. Shumon YOSHIARA
Leader
Basic Design Study Team
Japan International Cooperation Agency



Dr. Elsever Agayev
Deputy Minister
Ministry of Health
Government of Azerbaijan

ATTACHMENT

1. Components of the Draft Final Report
The Government of Azerbaijan agreed and accepted in principle the components of the draft final report explained by the Team.
2. Japan's Grant Aid scheme
Azerbaijan side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Azerbaijan as explained by the Team and described in Annex-3 of the Minutes of Discussions of Basic Design Study on the Project signed by both parties on May 29, 2007.
3. Schedule of the Study
JICA will complete the final report in accordance with the confirmed items and send it to the Government of Azerbaijan by early March, 2008.
4. Confidentiality of the Project
Both sides confirmed that all information related to the Project including detailed specifications of equipment and other technical information shall not be released to any outside party before the signing of all the Contract(s) for the Project.
5. Other relevant issues
 - 5-1. Confidentiality of the Project Cost Estimation
The Team explained the cost estimation of the Project as described in Annex-1. Both sides agreed that the Project Cost Estimation should never be duplicated or released to any outside parties before signing of all the Contract(s) for the Project. Azerbaijan side understood that the Project Cost Estimation attached as Annex-1 is not final and is subject to change.
 - 5-2. Operation and Maintenance of the Equipment
The Government of Azerbaijan promised to secure and allocate necessary budget as mentioned in Annex-2 for the proper and sustainable operation and maintenance of equipment to be provided under the Project.
 - 5-3. Technical cooperation
The Government of Azerbaijan has a further request for the technical cooperation to the Government of Japan for improvement of emergency medical services.
 - 5-4. Working Group
The Government of Azerbaijan promised to organize the Working Group for smooth implementation of the Project, which consists of Coordinator; Dr. Mursal Hamidov, chief doctor of Baku Emergency Medical Services Station (EMS), and representatives of four recipient hospitals and EMS NO. 9 Sub-station.



Annex-1 Project Cost Estimation

Total estimation cost of the Project if the Project is implemented, is 222 Million Japanese Yen. Details of the Project costs borne by the Azerbaijan and Japanese side based on the obligations of both governments, are as follows.

The Project costs borne by Japanese side is not final ceiling cost of the Exchange of Notes, and would be further examined by the Government of Japan.

(1) Project cost borne by the Japanese side

Table 1-1 Project costs borne by the Japanese side

Items	Million Yen
Equipment for major 4 hospitals and training center	200
Detailed design, supervision and operation and maintenance guidance	22
Total	222

(2) Initial cost borne by the Azerbaijan side for the Project

Table 1-2 Project costs borne by the Azerbaijan side

Items	Manat
Commissions of B/A and A/P	2,000
Total	2,000

(3) Estimate conditions

- Time of calculation: October 1, 2007
- Exchange rate: 1 US\$ = 120.23 yen
1 Manat = 138.7523 yen
- Implementation period: One fiscal year
- Other: The Project is to be implemented under the Japan's Grant Aid scheme



824

Annex-2 Operation and maintenance cost of the Equipment

The operation and maintenance cost of the Equipment will be incurred for reagents, printer paper, electricity, water supply, etc. These costs are to be borne by the respective four major hospitals and the Baku Emergency Medical Services Station, Azerbaijan. Operation and maintenance costs incurred under the Project are shown below.

Table 2-1 Breakdown of the estimated operation and maintenance cost

(Unit: Yen)

Equipment List		Chemical	Paper	Electricity		Water Supply		Sub Total	Operation Hour	Sub Total	Baku City Clinical Hospital No 3	Baku City Clinical Hospital No 6	Unified Hospital No 26	Republican Neurosurgery Hospital
No	Equipment Name	Yen	Yen	W	Yen	L	Yen							
Equipment for ICU of following emergency patient transfer major four Hospitals														
1	Blood gas analyzer	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
2	Electrolyte analyzer	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
3	Blood cell counter	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
4	Coagulometer	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
5	Glucose analyzer	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
6	Biochemical analyzer	100	10	100	1	5	0	111	1	111	853,588	156,513	114,212	198,703
7	ECG (12ch)		20	50	0	0	0	20	0	2	15,655	2,871	2,095	3,644
8	Patient monitor			50	0	0	0	0	12	5	38,304	7,023	5,125	8,917
9	Ventilator			200	2	5	0	2	12	26	197,900	36,297	26,480	46,068
10	Infusion pump			50	0	0	0	0	12	5	38,304	7,023	5,125	8,917
11	Suction pump			200	2	5	0	2	0	0	1,649	302	221	284
12	Videoscope set	100		500	4	5	0	105	0	10	80,244	14,714	10,737	18,680
13	Defibrillator	10	10	50	0	0	0	20	0	0	157	29	21	36
14	Infant warmer			50	0	5	0	1	12	11	82,990	15,217	11,104	
15	Syringe pump			50	0	0	0	0	12	5	38,304	7,023	5,125	
16	Fetal doppler	10		30	0	0	0	10	0	0	786	144	105	
Sub Total											5,615,818	1,029,713	751,412	1,278,863
Training Equipment														
17	CPR model (Adult)				0	0	0	0	3,000	0				
18	CPR model (Child)				0	0	0	0	3,000	0				
19	CPR model (Infant)				0	0	0	0	3,000	0				
20	Trauma kit				0	0	0	0	3,000	0				
21	Patient monitor			50	0	0	0	0	3,000	1,249				
22	Defibrillator	10	10	50	0	0	0	20	3,000	61,249				
23	ECG (12ch)		20	50	0	0	0	20	3,000	61,249				
24	Stretcher				0	0	0	0	3,000	0				
25	Back board set				0	0	0	0	3,000	0				
26	Splint set				0	0	0	0	3,000	0				
27	Intubation set				0	0	0	0	3,000	0				
28	Neck collar set				0	0	0	0	3,000	0				
Sub Total														123,746

Table 2-2 Sum of operation and maintenance cost

Project Site	Baku City Clinical Hospital No. 3	Baku City Clinical Hospital No. 6	Unified Hospital No. 26	Republican Neurosurgery Hospital	Baku Emergency Medical Services Station
Operation & maintenance cost per year	5,615,818 Yen (40,474 Manat)	1,029,713 Yen (7,422 Manat)	751,412 Yen (5,415 Manat)	1,278,863 Yen (9,216 Manat)	123,746 Yen (892 Manat)

89

Annex-3 List of the Equipment

List of the Equipment of the Project is shown below.

Table 3-1 Equipment plan

No.	Equipment Name	Project Sites					Total
		Baku City Clinical Hospital No. 3	Baku City Clinical Hospital No. 6	Unified Hospital No. 26	Republican Neurosurgery Hospital	Training Center	
Equipment for major four hospitals							
1	Blood gas analyzer	1	1	1	1		4
2	Electrolyte analyzer	1	1	1	1		4
3	Blood cell counter	1	1	1	1		4
4	Coagulometer	1	1	1	1		4
5	Glucose analyzer	1	1	1	1		4
6	Biochemical analyzer	1	1	1	1		4
7	ECG (12ch)	1	1	1	1		4
8	Patient monitor	10	4	5	3		22
9	Ventilator	5	2	3	2		12
10	Infusion pump	10	4	5	3		22
11	Suction pump	1	1	1	1		4
12	Video scope set	1	1	1	1		4
13	Defibrillator	1	1	1	1		4
14	Infant incubator	2	1	1			4
15	Syringe pump	2	1	1			4
16	Fetal doppler	1	1	1			3
Training equipment for emergency service staffs							
17	CPR model (Adult)					5	5
18	CPR model (Child)					5	5
19	CPR model (Infant)					5	5
20	Trauma kit					5	5
21	Patient monitor					5	5
22	Defibrillator					5	5
23	ECG (12ch)					5	5
24	Stretcher					5	5
25	Back board set					5	5
26	Splint set					5	5
27	Intubation set					5	5
28	Neck collar set					5	5

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824

Appendices 5 References

No.	Title	Form Book/Video Map/Photo	Original /Copy	Publisher	Published in
1	Statistical Year Book of Azerbaijan	Book	Original	State Statistical Committee of Azerbaijan	2006
2	Azerbaijan in Figures	Book	Original	State Statistical Committee of Azerbaijan	2007
3	Health Care Systems in Transition	Report	Copy	Ministry of Health	2004
4	State Programme on Poverty Reduction Economic Development	Report	Copy	IMF (International Monetary Fund)	2003
5	Decree of the President of the Republic of Azerbaijan	Letter Sheet	Copy	Presidential Office	2007
6	Absheron Peninsula Map (1/100,000 Scale)	Map	Print	Anonymous	Anonymous

