

No.

BASIC DESIGN STUDY REPORT
ON
THE PROJECT
FOR
EXTENDING MEDICAL EQUIPMENT TO
MULTI-FIELD HOSPITAL COMPLEX OF KZYLORDA
IN
THE REPUBLIC OF KAZAKHSTAN

JANUARY, 2002

JAPAN INTERNATIONAL COOPERATION AGENCY
INTERNATIONAL TECHNO CENTER CO., LTD.

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PREFACE

In response to a request from the Government of the Republic of Kazakhstan, the Government of Japan decided to conduct a basic design study on the Project for Extending Medical Equipment to Multi-Field Hospital Complex of Kzylorda and entrusted the study of the Japan International Cooperation Agency (JICA).

JICA sent to Kazakhstan a study team from May 26 to June 24, 2001.

The team held discussions with the officials concerned of the Government of Kazakhstan, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Kazakhstan 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 Kazakhstan for their close cooperation extended to the teams.

January, 2002



Takao Kawakami
President

Japan International Cooperation Agency

January, 2002

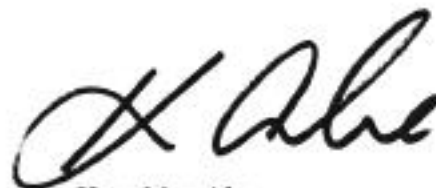
Letter of Transmittal

We are pleased to submit to you the basic design study report on the Project for Extending Medical Equipment to Multi-Field Hospital Complex of Kzylorda in the Republic of Kazakhstan.

This study was conducted by International Techno Center Co.,Ltd., under a contract to JICA, during the period from May, 2001 to January , 2002. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Kazakhstan 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,



Kazuhiro Abe

Project manager,

Basic design study team on

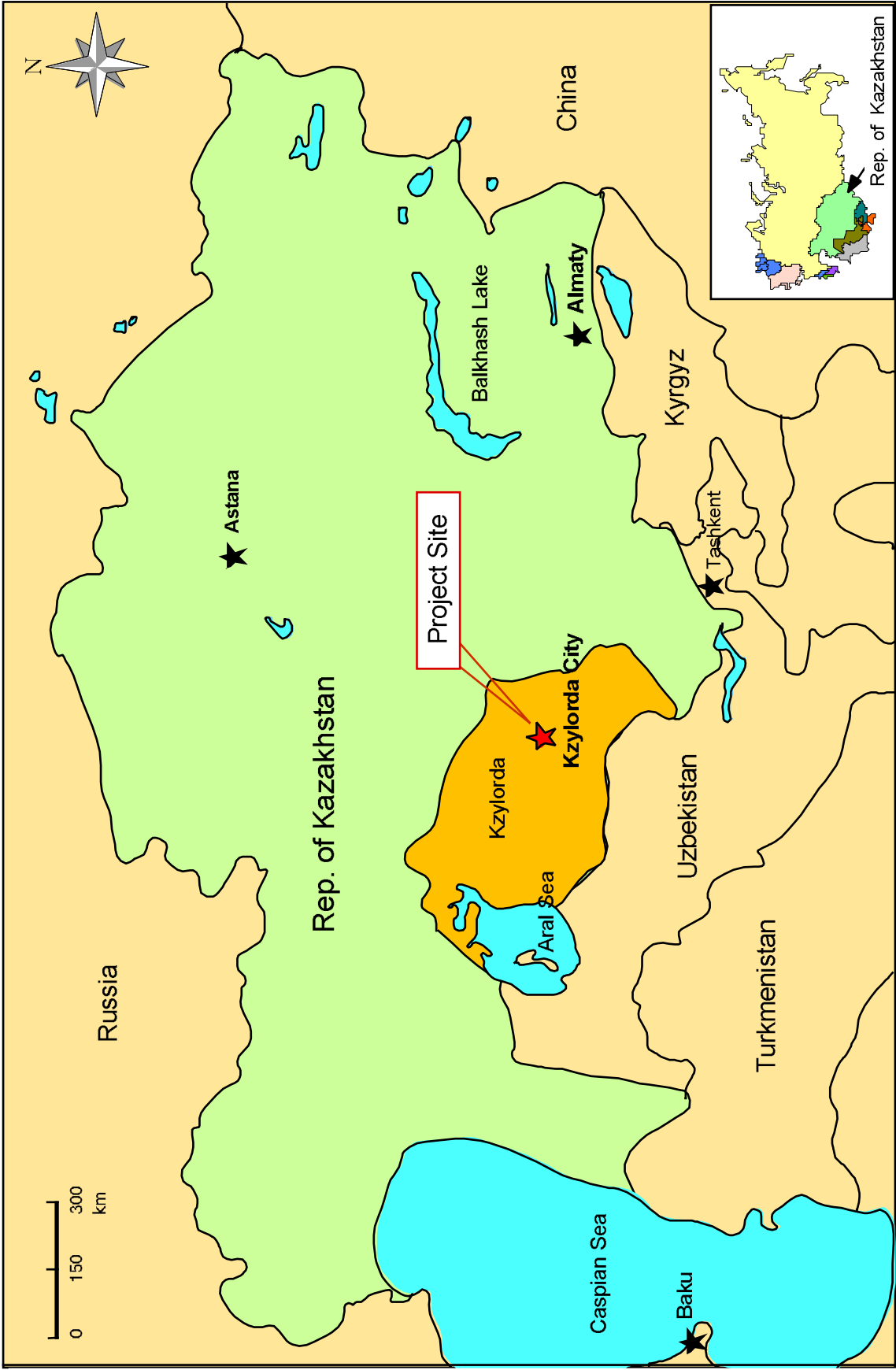
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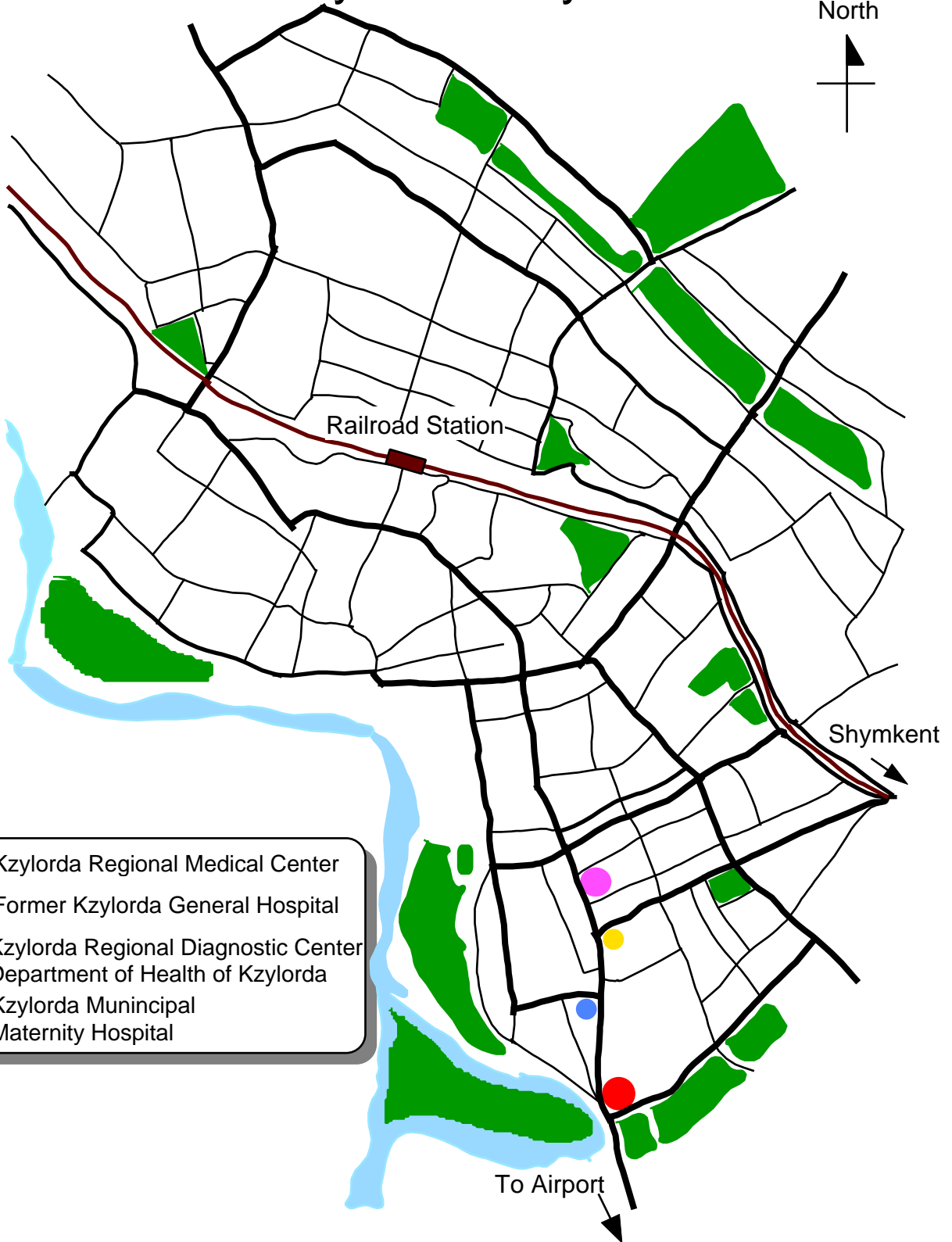
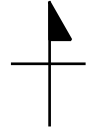
International Techno Center Co.,Ltd.

Republic of Kazakhstan



Kzylorda City

North



- Kzylorda Regional Medical Center
- Former Kzylorda General Hospital
- Kzylorda Regional Diagnostic Center
Department of Health of Kzylorda
- Kzylorda Municipal
Maternity Hospital

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Abbreviations

A/P	Authorization to Pay
B/A	Banking Arrangement
BHN	Basic Human Needs
BS	British Standard
CIS	Commonwealth of Independent States
DAC	Development Assistance Committee
DIN	Deutsches Institut für Normung
DOTS	Directly Observed Treatment, Short-course
E/N	Exchange of Notes
GDP	Gross Domestic Product
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
ICU	Intensive Care Unit
JIS	Japan Industrial Standards
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Summary

The Republic of Kazakhstan (hereinafter referred to as “Kazakhstan”), since its independence, has been shifting to market economy and implementing various economic reform measures, such as privatization of state-owned enterprises, introduction of foreign capitals and free pricing system, and financial and foreign-exchange reform programs.

In October 1997, the government of Kazakhstan announced the “Long-Term Development Plan, Kazakhstan 2030,” which aimed at, among other things, establishing a health/medical system for the entire nation. In November 1998, the Kazakhstan government formulated the “Health of the Nation Program” and has since implementing various measures to renovate its medical systems that were established under the socialist government and to restructure the country’s health systems. Based on the state’s policy, Kzylorda Region has established its own health program (“Health of People”) and is trying to administer and operate medical facilities that can effectively provide high-quality medical services based on minimum resources. However, the former Kzylorda General Hospital, the largest hospital in Kzylorda Region, was struggling to provide comprehensive medical services as the Region’s top-level hospital because of inadequate funding and other operating conditions. One of the objectives of the health program of Kzylorda Region is to fortify the hospital’s medical service capabilities by effectively appropriating limited financial resources and efficiently utilizing existing medical facilities so that it can continue to function as the Region’s top-referral hospital.

The living standard and state of health of Kazakhstan strongly reflect is economic difficulty so far. As for the Maternal and Child health, the perinatal mortality rate (fetal deaths after 22 weeks gestation + early neonatal deaths) and the mortality rate for children between one and four years of age have risen significantly since the country’s independence. On the other hand, the infant mortality rate (IMR), which ranked the lowest among European countries, has improved from 36 per 1,000 live births in 1996 to 19.6 per 1,000 live births in 2000, which is still lower than that of Russia but higher than those of neighboring Uzbekistan and Kyrgyzstan. The maternal mortality rate (MMR) registered 75.3 per 100,000 births in 1997, which was nearly ten times that of industrial nations, but decreased to 61.4 per 100,000 births in 2000, which is still about twice as high as the average of Central Asian countries of 36.3 per 100,000 births. The number of deaths in Kazakhstan from communicable diseases, parasite infestation, and other infections has been on the increase since its independence and is among the highest in the region following Tajikistan and Turkmenistan. At the same time, heart and cerebrovascular diseases that are prevalent in

industrialized nations are also on the increase in recent years, matching those of other European countries that are plagued with these diseases as major causes of deaths. Such deterioration in the country's health conditions is said to be attributable to a decline in household incomes and a deterioration in the state's health/medical services quality because of a financial crunch. Although a larger part of the medical facilities and equipment in Kazakhstan is severely deteriorated, the Kazakh government is unable to appropriate sufficient funds for the renewal, operation, and maintenance of such facilities and equipment.

Kzylorda Region, the target area of this project, has very few industries to support its economy, and its economic infrastructure is underdeveloped compared to other regions in the country. Also, the health/medical conditions of the region are much worse than those of other regions, registering higher IMR and morbidity rates of tuberculosis and other infectious diseases than the national averages. The overall improvement of the region's health/medical sector is urgently needed. Kzylorda Region, the target area of this project, has very few industries to support its economy, and its economic infrastructure is underdeveloped compared to other regions in the country. Also, the health/medical conditions of the region are much worse than those of other regions, registering higher IMR and morbidity rates of tuberculosis and other infectious diseases than the national averages. The overall improvement of the region's health/medical sector is urgently needed.

Under these circumstances, the Kzylorda regional government, in line with the health-sector reform policies of the central government, has established certain objectives to better utilize the limited health/medical budget and facilities and to enhance the capability of the region's top-level hospital. As part of the efforts to achieve these objectives, the government of Kazakhstan constructed the Kzylorda Regional Medical Center in December 2001. In response to the Kazakh government's request to procure necessary medical equipment for Kzylorda Regional Medical Center, this Project aims to fortify the medical service capability of the hospital in order to enhance the overall health/medical conditions of Kzylorda Region. In response to this request, the government of Japan dispatched a preparatory study team in October 2000 to survey the plan to construct Kzylorda Regional Medical Facility Rearrangement Plan, the present conditions of the health sector, and the status of health and medical services being provided in the target region. The study confirmed that upgrading the top-level medical institution of the region would enhance the overall quality of the medical services in Kzylorda Region, and that a Basic Design Study should be carried out. Consequently, Japan International Cooperation Agency (JICA) dispatched a Basic Design Team to the target site from May 26 to June 24, 2001, which, upon returning to Japan, analyzed the study

findings and went back to Kazakhstan to present the draft report of the Basic Design Study between September 23 and October 17, 2001. The Basic Design Study confirmed that the equipment items that were finally requested by the Kazakh side would be essential for medical examination, tests, and treatment and would be used in 19 departments where a demand for such items were high.

To achieve the above objectives, this project aims to support the medical activities of lower-level facilities and primary health care services by assisting the establishment of the Kzylorda Regional Medical Center. This project will focus on 19 departments of the Kzylorda Regional Medical Center that play a central role in supporting the provision of comprehensive medical services by procuring medical equipment for each of these departments.

19 departments and the Items of medical equipment requested are listed below.

Department and Requested Equipment

	Department	Major Equipment
1	Hemodialysis Dept.	Hemodialysis Unit
2	Surgery Dept.	Universal Operation Table, Electrosurgical Unit, Anaesthetic Unit
3	Dental Dept.	Dental Unit, Autoclave
4	X-Ray Diagnostic Dept.	X-ray Unit, X-ray Unit, Fluoroscopy, X-ray Film Processor
5	Pediatric Dept.	EEG, ECG, Defibrillator, Pulseoxymeter, Ultrasonic Nebulizer
6	Perinatal Center	Patient Monitor , Fetal Monitor, Transportation Incubator, ECG
7	Reanimation Dept.	ICU Bed, Patient Monitoring System, Blood Gas Analyser, Ventilator
8	Endoscopy Dept.	Gastrointestinal fiberscope, Duodenofiberscope, Bronchofiberscope
9	Functional Examination Dept.	ECG, Spirometer, EEG, EMG, Ultrasound Apparatus
10	Laboratory Dept.	pH-meter, Bloodcell Counter, Biochemical Analyser
11	Administration Dept.	TV monitor, Lecturescope, Video Projector
12	Otorhinolaryngology Dept.	Rhino-Laryngo Foberscope, Ent Treatment Unit, Suction Unit
13	Urology Dept.	Examination Table/ Urology, Lithotripter
14	Orthpedics Dept.	Orthopedic Table, Arthorscopy Set
15	Ophthalmology Dept.	Fundus Camera, Projection Perimeter, Ophthalmoscope, ND-YAG Laser
16	Rehabilitation Dept.	Hydro Bath, Extraction Unit, Treadmill
17	Garages	Ambulance (Jeep Type)
18	Pharmacy Dept.	Water Distiller, Hot Air Sterilizer, Autoclave, Vertical
19	Pathology Dept.	Microtome, Binocular Microscope, Autopsy Instrument Set

Prior to determining the quantity and grade of each equipment item, we have established basic principles of deletion as listed below, and items to which any one or more of these rules were applicable would be excluded from the equipment plan:

- Duplicates another equipment in the same clinical department,
- Can be provided as a component of another equipment item,
- Not used for diagnosis or treatment at the Kzylorda Regional Medical Center,
- Can be purchased on the recipient side's own account,
- Requires high maintenance costs that would create financial burden on the Kzylorda Regional Medical Center,
- Will unlikely bring about significant benefits,
- Requires spare or consumable parts that cannot be easily obtained locally, or
- May cause environmental pollution.

Listed below is the outcome that is expected to be produced by the implementation of the Project.

1) Direct Effect

- The capabilities of the Kzylorda Regional Medical Center will be enhanced both quantitatively and qualitatively.

Procured equipment will enable the Medical Center to conduct tests and diagnosis more accurately and perform an increased number of clinical examinations and operations.

- A clearly defined medical referral system will be established in Kzylorda Region.

After the procurement of equipment, an increased number of patients are projected to visit the Medical Center for more accurate and advanced tests, diagnosis, and treatment. This will help establish the medical referral system in Kzylorda Region, as the role of each medical facility becomes more clearly defined.

2) Indirect Effect

- The overall health/medical service quality in Kzylorda Region will be improved.

As the function of the Kzylorda Region Medical Center becomes more fortified, it will be able to work more closely with lower-level medical facilities and primary health care institutions. This will elevate the medical service capabilities of the entire Kzylorda Region, which will lead to the decrease of infant and maternal mortality rates, as well as the improvement of other health indexes of the region.

In view of the above, this Project is deemed to play an important role in improving the health of the residents of the region. The population that is expected to directly benefit from the Project is estimated at around 600,000, including those suffering poverty. The annual equipment maintenance cost to be incurred by the implementation of this project is estimated at about 33 million yen (about 40 million Tenge), which accounts for 16% of the hospital's total operating cost and 1% of the Kzylorda Health Department's annual budget for 2001. The additional maintenance cost will be sufficiently covered by the hospital's maintenance/administrative budget for 2001.

Kzylorda Regional Medical Center entrusts a local private company to control and maintain its medical equipment. This local company is staffed with three electricians and one mechanical engineer and provides 24-hour on-call servicing and periodic inspections.

Four engineers of the Facility Department attend maintenance of utility facilities (water, sewage, electricity, ventilation, and heating). The current equipment/facility maintenance system is adequately supporting the hospital's medical activities and will be able to continue to do the same after the implementation of the project.

Listed below are future tasks and recommendations for the Kazakhstan side to ensure that the Project will take effect and be sustained.

Securing of Medical Funds

While new financial and legal systems for the medical sector that are more suited for market economy are being developed, the Kazakh medical sector is still in the process of finding workable solutions after the collapse of the medical/health insurance system in 1998. Although a new medical/health insurance system is scheduled to be adopted in 2002, its details have yet to be officially announced. How to secure funds for the future health/medical programs is a question to be answered, and the Kazakh side is expected to establish a system under which sufficient funds will be appropriated for the health/medical sector.

Education of Medical Personnel

In the Republic of Kazakhstan, most of the medical equipment has not been renewed since the country's independence. With the superannuated equipment, hospitals cannot obtain test data necessary for the diagnosis or treatment based on the latest medical science. With an aim to elevate the technical and awareness levels of the medical staff, who have grown accustomed to traditional methods, the Kazakhstan side has been conducting training seminars. However, many people still show little concern about changing the administrative aspects of hospital operation, including the control of medical charts and the management of hospital facilities and equipment. For this project to take maximum effect, the medical staff's awareness in these aspects needs to be

elevated, for which proper education will be desirable.

Development of Health/Medical System

Medical institutions in Kazakhstan still follow the old system of the former Soviet era, under which sharing of rooms and medical equipment is prohibited even among related departments, such as operation room and delivery room, and each clinical department tends to control its own equipment. Through this Project, the old system is expected to change and be replaced with a new one that is better suited for the current health reform program. In addition, it will be desirable if a new medical service system is established to enable each clinical department to function as part of a comprehensive system and share the expensive medical equipment not only with other departments but also with other medical institutions within the community.

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Chapter 1 Background of the Project

Chapter 1 Background of the Project

The Kzylorda regional government, in line with the health-sector reform policies of the central government, has established certain objectives to better utilize the limited health/medical budget and facilities and to enhance the capability of the region's top-level hospital. As part of the efforts to achieve these objectives, the government of Kazakhstan constructed the Kzylorda Regional Medical Center in December 2001. At the initial planning stage, the total construction cost of 81 million dollars (about 9.72 billion yen) were to be covered by the proceeds of petroleum products that were transferred from a public petroleum company formerly owned by the state. Of the total construction cost, 8.5 million dollars (about 1.02 billion yen) were to be appropriated for the procurement of equipment. However, because of a sharp drop in oil prices, actual proceeds turned out to be insufficient to cover the entire cost, and the equipment budget had to be used to compensate the shortage. As a result, although new facilities had been completed, the government has been struggling to upgrade and supplement the deteriorated medical equipment due to budgetary constraint. In response to the Kazakh government's request to procure necessary medical equipment for Kzylorda Regional Medical Center, this Project aims to fortify the medical service capability of the hospital in order to enhance the overall health/medical conditions of Kzylorda Region.

In response to this request, the government of Japan dispatched a preparatory study team in October 2000 to survey the plan to construct Kzylorda Regional Medical Facility Rearrangement Plan, the present conditions of the health sector, and the status of health and medical services being provided in the target region. The study confirmed that upgrading the top-level medical institution of the region would enhance the overall quality of the medical services in Kzylorda Region, and that a Basic Design Study should be carried out. Consequently, Japan International Cooperation Agency (JICA) dispatched a Basic Design Team to the target site from May 26 to June 24, 2001, which, upon returning to Japan, analyzed the study findings and went back to Kazakhstan to present the draft report of the Basic Design Study between September 23 and October 17, 2001. The Basic Design Study confirmed that the equipment items that were finally requested by the Kazakh side would be essential for medical examination, tests, and treatment and would be used in 19 departments where a demand for such items were high.

Chapter 2 Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

In October 1997, the government of Kazakhstan announced the “Long-Term Development Plan, Kazakhstan 2030,” which aimed at, among other things, establishing a health/medical system for the entire nation. In November 1998, the Kazakh government formulated the “Health of the Nation Program” and has since implementing various measures to renovate its medical systems that were established under the socialist government and to restructure the country’s health systems. Based on the state’s policy, Kzylorda Region has established its own health program (“Health of People”) and is trying to administer and operate medical facilities that can effectively provide high-quality medical services based on minimum resources. However, the former Kzylorda General Hospital, the largest hospital in Kzylorda Region, was struggling to provide comprehensive medical services as the Region’s top-level hospital because of inadequate funding and other operating conditions. One of the objectives of the health program of Kzylorda Region is to fortify the hospital’s medical service capabilities by effectively appropriating limited financial resources and efficiently utilizing existing medical facilities so that it can continue to function as the Region’s top-referral hospital. This project intends to support these endeavors and focuses on upgrading the medical service qualities of the Kzylorda Regional Medical Center.

To achieve the above objectives, this project aims to support the medical activities of lower-level facilities and primary health care services by assisting the establishment of the Kzylorda Regional Medical Center. By enabling the Kzylorda Regional Medical Center to function fully, it is expected that the overall medical service quality of the region will be enhanced, and the needs of the residents will be better served.

This project will focus on 19 departments of the Kzylorda Regional Medical Center that play a central role in supporting the provision of comprehensive medical services by procuring basic medical equipment for each of these departments.

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

(1) Basic Policy

1) Scope of Equipment Design

During the site survey and the subsequent analyses in Japan, we examined comprehensively the layout of the departments in the Kzylorda Regional Medical Center, the conditions of the facilities, and the status of the operation of the existing equipment, in consideration of the present situations and priority agendas of the health sector of Kazakhstan and Kzylorda Region. Consequently, we have selected 19 departments as listed below, for which equipment for basic medical services would be provided:

1 Hemodialysis Dept.	11 Administration Dept.
2 Surgery Dept.	12 Otorhinolaryngology Dept.
3 Dental Dept.	13 Urology Dept.
4 X-Ray Diagnostic Dept.	14 Orthpedics Dept.
5 Pediatric Dept.	15 Ophthalmology Dept.
6 Perinatal Center	16 Rehabilitation Dept.
7 Reanimation Dept.	17 Garages
8 Endoscopy Dept.	18 Pharmacy Dept.
9 Functional Examination Dept.	19 Pathology Dept.
10 Laboratory Dept.	

2) Criteria for Selecting Equipment

Prior to determining the quantity and grade of each equipment item, we have established basic principles of deletion as listed below, and items to which any one or more of these rules were applicable would be excluded from the equipment plan:

- Duplicates another equipment in the same clinical department,
- Can be provided as a component of another equipment item,
- Not used for diagnosis or treatment at the Kzylorda Regional Medical Center,
- Can be purchased on the recipient side's own account,
- Requires high maintenance costs that would create financial burden on the Kzylorda Regional Medical Center,
- Will unlikely bring about significant benefits
- Requires spare parts or consumable that cannot be easily obtained locally, or
- May cause environmental pollution.

Equipment items that were requested for this project were divided into three categories as outlined

below to determine whether or not to be included in the project, and the quantity and the grade with regard to each item:

- Equipment to be replaced

If renewing certain aged equipment will restore the hospital's medical service capacity, and if its maintenance will be financially feasible, then it shall be included in the equipment plan.

- Equipment to be supplemented

If certain existing equipment is determined quantitatively insufficient, and supplementing it will enhance the diagnosis/treatment activities of the target facility, then it shall be included in the equipment plan.

- Equipment to be newly introduced

If certain equipment is deemed essential for elevating the medical service level of the target facility, it shall be included in the equipment plan as long as it can be maintained within the target facility's technical, personnel, and financial capacities.

(2) Policies Concerning Natural Environment

Kzylorda city is under harsh climatic conditions, and the high temperature in summer (39°C in July) and the low temperature in winter (-30°C in February) differ by more than 60°C. In the past, the city recorded the highest temperature of 44°C in July and the lowest temperature of -41°C in February. Therefore, in drafting the implementation schedule, these weather conditions must be taken into account especially when determining the timing of procurement. Equipment items that have electronic circuits, as well as reagents and other chemicals that cannot be reused once they are frozen, must be handled outside the intensely cold season.

Tap water of the target facility has twice the hardness of standard Japanese city water, containing relatively large amounts of residual substances, and therefore is not suitable for drinking. Thus, a pretreatment system of tap water will need to be installed.

(3) Policies Concerning Socio-Economic Conditions

Although the medical staff of Kzylorda Regional Medical Center are highly knowledgeable about advanced medicine and theories, they still follow obediently the old system from the former Soviet era (for instance, sharing of operating or delivery rooms, as well as medical equipment, is prohibited even among related departments), and these old rules, customs, and practices are hard to be reformed. However, for providing medical services more efficiently and administering the

entire facility more effectively, it should have a central system to control various equipment items that can be shared by more than one department. Therefore, we will examine the physical layout of different departments, number of medical staff, work shifts, and flow lines to identify which equipment items can be shared among departments and determine their quantities accordingly.

(4) Policies Concerning Procurement Conditions and Business Practice

No medical equipment is being manufactured in Kazakhstan, and most of the equipment used in the country was made in the former Soviet Union or Russian Republic. There is only one trading company that deals Russian-made medical equipment within Kzylorda city, and most of the distributors of Japanese, European, and the U.S. equipment manufacturers are located in Almaty city, the former capital of Kazakhstan, and Astana city. Manual reagents and chemicals are obtainable from three companies within Kzylorda city, but those used for automatic analyzers and other devices are not. There are 19 companies that supply medical drugs and supplies, of which three companies distribute X-ray films, developer. Therefore, we will make it a basic condition for selecting equipment items to be procured that their distributors must be located in Kazakhstan, Kyrgistan or Russia. Also, we will select as much as possible testing devices that use reagents that are obtainable within the Kzylorda city and do not require reagents of particular manufacturers.

In Kazakhstan, importing medical equipment requires authorization by the Ministry of Health (medical equipment registration system). However, as stated in the minutes of meeting of the basic design site study, the equipment to be procured under this project will be exempted from such authorization.

(5) Policies Concerning the Administrative/Maintenance Capacity of the Kzylorda Regional Medical Center

Kzylorda Regional Medical Center is supervised by and working closely with the Department of Health of Kzylorda Region. Continued coordination and cooperation among these entities will be desirable for the execution of this project.

The annual equipment maintenance cost to be incurred by the implementation of this project is estimated at about 33 million yen (about 40 million Tenge), which accounts for 16% of the hospital's total operating cost and 1% of the Kzylorda Health Department's annual budget for 2001. The additional maintenance cost will be sufficiently covered by the hospital's maintenance/administrative budget for 2001, as its revenues from medical charges are increasing every year. Therefore, we will select equipment items, the maintenance cost of which can be covered by the budgets of Kzylorda Region and Kzylorda Regional Medical Center.

A local private company undertakes the maintenance of the hospital's medical equipment and provides periodic servicing and 24-hour/day on-call services in case of equipment failure with three electricians and one mechanic. All of these technicians are highly skilled and possess a thorough knowledge of medical equipment and clinical engineering. The equipment to be procured by this project will probably be covered within the scope of the current contract with the local company. As for the maintenance of utility facilities (water, sewage, electricity, ventilation, and heating), the hospital's facility department with four engineers is sufficiently backing up the hospital's medical activities and will be able to handle the new equipment as well.

(6) Policies for Selecting the Grade of Equipment

Specifications and grades of the equipment to be procured under this project shall be appropriate for the skill levels of the staff of the target facility. Also, spare parts and expendable items should be obtainable within Kazakhstan. Specific quantities of expendable supplies, testing reagents, and spare parts will be included in the equipment plan to ensure the operation of equipment in the initial stage after the completion of this project. The electricity supplied to the hospital is relatively stable and within the voltage fluctuation range that does not affect general medical equipment. Therefore, voltage regulators will be attached to only those devices that are susceptible to voltage fluctuation. Since the hospital does not have a treatment system of city water within the facility, water-treatment units will be attached to instruments that may be affected by water quality.

(7) Policies Concerning Procurement Method and Construction Period

The medical equipment to be procured under this project is not produced in Kazakhstan and, therefore, will be sorted from Japanese manufacturers according to the grant aid framework of the Japanese government. However, if Japanese manufacturers do not have three or more agencies that can provide expendable items or follow-up services within Kazakhstan or its neighboring countries, then third-country sources may be considered.

The equipment will be transported from Japan and USA to Russia (Vostochny Port), by ocean freight and from there to Kazakhstan by train. European equipment will be transported from Germany to Kazakhstan by train also.

The implementation schedule needs to be drafted by taking into account how long the Kazakh Upper and Lower Houses will take to ratify the project after the signing of the Exchange of Notes (E/N). Considering the fact that a certain past project took almost one year for ratification after the signing of E/N, we shall allow ample time for the implementation of the project.

2-2-2 Basic Plan (Equipment Plan)

(1) Examination of Each Department

1) Hemodialysis Department

This department was operating as part of Kzylorda Municipal Hospital between 1985 and 1999 and later integrated into the former Kzylorda General Hospital under the Medical Facility Rearrangement Plan. The department is the only dialysis clinic in Kzylorda city and will be consolidated with the Nephrology Department into a new clinical department with 40 beds and three physicians, including one nephrology doctor. The department is equipped with two hemodialysis units, but one of them is broken beyond repair and the other often malfunctions, hindering the treatment of patients. Of 450 to 500 kidney patients in Kzylorda region, around 150 are said to likely develop chronic kidney failure. Currently, 15 patients are confirmed to be in need of hemodialysis, of who five are undergoing hemodialysis in this department. Because the remaining ten patients could not be treated in the department because of the insufficient hemodialysis units, seven were transferred to Chimkent city and three to Almaty city for hemodialysis treatment.

Table-1: Number of Kidney Patients

	1998	1999	2000
Glomerulitis renal failure	31	81	142
Tubulointerstitial nephritis	66	409	673
Renal calculus urolithiasis	5	17	63
Total	102	507	878

Source : Kzylorda Regional Medical Center

This department carries out two to three hemodialysis sessions per week for each of the five patients (2 inpatients and 3 outpatients), each session taking four hours. In addition, the department gave hemodialysis treatment to five patients with acute kidney failure in 2001. To enable the department to treat a total of 15 patients, consisting of five existing patients and ten patients being treated in other regions, this project needs to procure at least three hemodialysis units. The emergency treatment of acute kidney failure patients shall also be taken into account in determining the quantity.

Calculation of required quantity of hemodialysis units:

No. dialysis sessions: 15 patients x 2-3 sessions/week = 30-45 sessions

Required quantity:

$30-45 \text{ sessions/person} \div 2-3 \text{ sessions/day} \div 5 \text{ days/week} = 2-3 \text{ units} = 3 \text{ units}$

This project will procure three hemodialysis units, as the existing two units are not reliable.

2) Surgery Department

There are five operating rooms in the former Kzylorda General Hospital, in which about three operations per room per day, or a total of about 5,000 operations are performed annually.

The number of operations has been on the slight increase since 1998. The number of emergency operations in 2000 increased by 40% from the preceding year to 725 operations, 65% of which were appendicotomy and other such simple operations.

Table-2: Manpower in Surgery Department

	Planned Surgery	Emergency Surgery	Urology	Orthopedics & Traumatology
Beds	30	20	10	20
Physicians	Endoscopy: 1 General surgery: 2 Vascular surgery: 1	General surgery: 2	Urology: 1	Traumatology: 2 Orthopedics: 1
Nurses	Surgery: 10 Surgical ward: 10	Both sections: 12		

Source : Kzylorda Regional Medical Center

For the Kzylorda Regional Medical Center, six planned operating rooms and three emergency operating rooms are being planned. Table-3 outlines the actual number of operations performed in the former Kzylorda General Hospital for each department. Operations without the record of 'planned' or 'emergency' were counted as planned operations.

The number of operations varies greatly from 1.12 to 4.79 per room per day (2000). A wide variety of operations were performed, but most of them are done in a relatively short time. Thus, the equipment plan will cover only six rooms, consisting of four planned operating rooms and two emergency operating rooms where three or more operations are performed on the daily average.

In addition to basic equipment needed for operating rooms, this project will procure cysto-urethroscope sets for adults and infants for the Urology Department, operation microscopes for ENT for the Otorhinolaryngology Department, and lararoscopes (including spinal cord) for neurosurgery. Infant incubators will also be included in the equipment plan for preoperative and postoperative management of infants.

Table-3: Estimated Number of Operations in Each Room

Op. room	Department			1998		1999		2000	
				Op.	Per day	Op.	Per day	Op.	Per day
Plan 1	Planning Surgery	Neonate		1,086	4.18	1,223	4.70	1,245	4.79
Plan 2	Laparoscopy			189	0.73	248	0.95	306	1.18
Plan 3	Brain Surgery	Traumatology		432	1.66	419	1.61	442	1.70
Plan 4	Pediatric	Ophthalmology		281	1.08	295	1.13	298	1.15
Plan 5	Urology	Gynecology		171	0.66	185	0.71	222	0.85
Plan 6	Otorhinolaryngology	Oral Surgery		814	3.13	665	2.56	733	2.82
Emergency 1	Urology	Gynecology		79	0.30	95	0.37	99	0.38
Emergency 2	Brain Surgery	Traumatology	Pediatric	715	2.75	799	3.07	1,085	4.17
Emergency 3	Otorhinolaryngology	Oral Surgery	Ophthalmology	-	-	-	-	-	-

Source : Kzylorda Regional Medical Center

3) Dental Department

Presently, the Dental Department in the former Kzylorda General Hospital offers services in general dentistry and oral surgery and shares a hospital ward with the Otolaryngology Department. Its staff consists of one dentist, two oral surgeons, one dental technician, and nine nurses who work at the hospital ward. This is the only dental clinic in Kzylorda region that is staffed with specialized oral surgeons. The department treats an average of 40 patients per day and 6,000 patients per year. 75% of procedures performed are tooth extraction.

Many dental clinics in Kzylorda region have already been privatized, and consequently the number of general dentistry patients in 2000 decreased to about half of that in 1998. On the other hand, 437 oral surgeries were performed in 2000, which mainly consist of operations of benign maxillary tumors (30 cases), antrotomy (47 cases), and sequestrotomy (31 cases).

Based on the above, this project will procure dental equipment for oral surgery and treatment of inpatients, the demand for which is projected to remain high in the future.

Table-4: Number of Dental Patients

FY	1998	1999	2000
Patients	1,002	863	519
Operation	591	446	437

Source : Kzylorda Regional Medical Center

4) X-Ray Diagnostic Department

This department has the fluoroscopy, general X-ray, dentistry, mammography, and indirect

radiography rooms and developing rooms and is staffed with three radiologists and eight technicians.

About 50,000 X-ray photographs were taken in 2000, of which about 50% was general X-ray, about 4,000 cases were fluoroscopy, and about 3,400 were radiography with contrast media. Table-5 below shows the main body parts of general X-ray, fluoroscopy, and radiography with contrast media.

The department currently uses a fluoroscopy X-ray unit, with which the technicians take photographs while manually injecting contrast media and checking the timing of photography. However, the accuracy of the unit is insufficient to obtain adequate information especially when examining cerebrovascular conditions.

The department has one aged portable-type mammography unit, which is the only such device in Kzylorda city, handling 1,500 cases annually. In drafting the equipment plan, replacement or supplementation of radiography equipment that is frequently used but cannot produce accurate images because of obsolescence was considered. Thus, this project will procure general X-ray, fluoroscopy, and contrast media radiography units and accessories, as well as a mammography unit, a portable X-ray unit for patients who have difficulty moving, and a panoramic X-ray unit for the purpose of fortifying the oral surgery equipment.

Table-5 : X-ray Photography Body Parts

Main general X-ray and Fluoroscope No.	Main thrography
Bone 11,287cases (3,171cases, charged)	Pharygraphy 87cases
Intrathoracic(direct) 5,552cases (171cases, charged)	Pyelography 167cases
Intrathoracic(Indirect) 6,496cases (3,454 cases, charged)	Urography 667cases
Stomach / esophagus 3,634cases	Urethrogram 176cases
Intrathoracic fluoroscopy 2,241cases (163 cases, charged)	Hysterosalpingography 790cases
Intrathoracic tomography 1,325cases (192 cases, charged)	Anterigraphy 213cases
Breast 847cases (691 cases, charged)	Great anterigraphy 67cases
Stomach / esophagus fluoroscopy 778cases (310 cases, charged)	Venography 11cases
	Ventriculography 21cases
	Sbduralgraphy 33cases
	Myelography 193cases

Source : Kzylorda Regional Medical Center

5) Pediatrics Department

In 1998, the Municipal Pediatrics Hospital (with 250 beds) was integrated with the Pediatrics Department (with 40 beds) of the former Kzylorda General Hospital into the current Pediatrics Department, which will be further integrated into the Perinatal Center to be newly opened. The remaining five pediatric sections with a total of 20 beds, consisting of the pediatric nephrology section (35 beds), the pediatric environmental protection section (60 beds), the pediatric neurology

section (40 beds), and pediatrics sections No. 1 and No. 2 (30 and 35 beds respectively), will move to an annex. At that time, the personnel will consist of 25 doctors, 98 nurses, and about 100 health workers. The number of inpatients in the Pediatrics Department accounts for 28% of the total inpatients in the Center. The average length of hospitalization is about 12 days, and the turnover rate is lower than the average of all the departments. The average daily number of inpatients is between 30 and 40. The number of deaths of pediatric patients during hospitalization accounts for 13% of the total deaths in the whole Medical Center (25 of 181 deaths). If the pediatric sections mentioned above move to the annex, some of the testing instruments will not be shared by all sections of the Pediatric Department. Therefore, this project will procure basic equipment needed for pediatric care, such as electrocardiograph (ECG) and electroencephalograph (EEG) machines, as well as portable ultrasound apparatus.

Table-6 : Number of Pediatrics Inpatients (2000)

	In-patients	rural patients	Bed occupancy rate	Stay days	No.of Inter death
Clinic1	805	185	27.6	12.7	7
Clinic 2	1,513	74	44.3	8.4	14
Emviopment	871	262	28.8	11.7	2
Neulogy	1,173	336	30.1	10.4	3
Urology	775	102	23.0	14.7	0
Neonate	1,098	149	31.4	12.5	18
Pediatric Department	6,235	1,108	30.9	11.7	44
Total	22,645	5,413	32.3	10.5	181

Source : Kzylorda Regional Medical Center

6) Reanimation Department

In the former Kzylorda General Hospital, this department had four treatment rooms with 12 beds for patients from neonates to adults. The Reanimation Department in the Kzylorda Regional Medical Center has 22 beds in two separate wings, each having 11 beds. The staff of this department consists of 13 doctors and 65 nurses. All the doctors in this department are anesthesiologists and work within the department and also in operating rooms. The department has a laboratory, which is the only lab in the Kzylorda Regional Medical Center that is equipped with blood gas and electrolyte analyzers. It is staffed with one clinician and six technologists, who conduct blood and biochemical analyses on a 24-hours/day basis.

This department accommodated about 1,430 inpatients in 2000, each staying about two days on the average at the bed occupancy rate of about 65%. Of the whole inpatients in the hospital, a little less than 3% requires treatment in the Reanimation Department, while 70% of deaths in the hospital occur in this department. The high mortality rate is due to the fact that the department accepts

only patients in grave conditions.

Table-7 : Number of Patients at Reanimation Department

FY	1998	1999	2000
New in-patient	932	1,185	1,430
In-patient No.	1,918	2,858	2,847
Bed occupancy rate	43.8%	66.8%	65%
Average Length of Stay (day)	2.06	2.41	1.99
Death in hospital(total death)	92(133)	129(182)	113(181)

Source : Kzylorda Regional Medical Center

This department provides more intensive care than other clinical departments for inpatients after surgery or in critical condition and therefore should be able to continuously monitor patients' vital signs (ECG, respiration, temperature, blood pressure, etc.) and treat patients whose conditions may suddenly worsen, such as by securing airways, using defibrillation to treat arrhythmia, and injecting drug fluids to resuscitate patients. However, such activities are hindered by aging equipment that often breaks down or malfunctions.

The number of patients to be treated at the Reanimation Department will not likely increase, as the Medical Facility Rearrangement Plan has been completed, leaving no more hospitals to be closed down, and the service area and population of the Kzylorda Regional Medical Center will not likely expand significantly in the future. Based on the current operation rate and the projected number of patients in the Kzylorda Regional Medical Center, the occupancy rate of the 22 beds will be around 40%. Thus, this project will procure patient monitoring systems, emergency treatment equipment, and other devices that will sufficiently cover 11 beds.

7) Perinatal Center

The Perinatal Center will open a new ward in 2001. About 10,000 deliveries take place in Kzylorda Region annually, and all childbirths within Kzylorda City are carried out at the Kzylorda Municipal Maternity Hospital, which is located about three kilometers away from the Kzylorda Regional Medical Center and is the only maternity hospital in the city offering perinatal services. 3,968 deliveries, or about 40% of the total childbirths in the Region, take place in this hospital. 15 to 22% of the expectant mothers visit here referred by medical institutions in local villages. The hospital has 210 beds at a high occupancy rate of 95%. In 2000, there were 241 cases of premature births (6.0% of total births) that occurred between 24 to 36 weeks' gestation, 86 perinatal deaths (stillbirths after 22 weeks' gestation plus neonatal deaths less than seven days old). 94.5% of expectant mothers suffered from mild anemia, urinary protein to serious pregnancy toxemia,

tonia, or other disorders. In addition, 20 to 30% of total births resulted in abnormal labor or disabled babies caused by abnormal labor.

This Center will accommodate high-risk expectant mothers (541 cases in 2000) referred by local villages. In addition, the center will accept abnormal labor cases (about 1,800 cases annually) that cannot be sufficiently handled at the Kzylorda Municipal Maternity Hospital. In 2000, 77% of neonate patients hospitalized in Kzylorda Regional Medical Center were referred from the Kzylorda Municipal Maternity Hospital, and the Kzylorda Regional Medical Center will continue to accept such patients.

Considering the high demand, this project will procure equipment items that are deemed necessary for perinatal care, such as patient monitors, fetal monitors, neonatal monitors, infant incubators, phototherapy units, infant warmers, and gynecology examination units.

8) Endoscopy Department

This department was set up as part of the Surgery Department in the former Kzylorda General Hospital, but will be established an independent department with four rooms in the Kzylorda Regional Medical Center. Presently, the department is staffed with two doctors specialized in endoscopy and two nurses, handling about 10,000 cases (2000), or about 20 patients a day on the average, which has been on the increase in recent years. The department handles both children and adults, the ratio of which is 3 to 7. This project will procure upper/lower gastrointestinal tract endoscopes that are in high demand, a TV system for specialist training, and fixtures for sterilization and storage.

Table-8 : Types of Endoscopy

	FY1998	FY1999	FY2000
Esophagitis	1,668	1,888	2,376
Gastritis	2,296	2,798	3,206
Retrograde Gastritis and Duodenitis	415	692	715
Duodenitis	1,041	1,486	1,564
Gastric ulcer	745	577	657
Duodenal ulcer	668	689	615
Colitis	533	507	581
Other	612	654	735
Total	7,978	9,291	10,449

Source : Kzylorda Regional Medical Center

9) Functional Examination Department

In this department, ultrasonic examination had been conducted with one ultrasound device until 1998, when additional device was purchased. The number of examinations increased substantially from 1,800 in 1998 to 16,000 in 2000. Each device is handling about 20 to 30 cases daily, about

50% of which are abdominal examinations. The department is staffed with three specialized doctors, one of whom also works at the Diagnosis Center.

The existing two ECG machines handles 2,500 to 3,000 tests annually (2000) or an average of 12 tests per day. Electroencephalography is conducted by neurologists using one EEG machine at the laboratory of the Surgery Department. About 650 to 700 of inpatients with cranial nerve disorders require electroencephalography each year. As the frequent use of and the high demand for functional examination equipment have been confirmed, this project will supplement ultrasonic testing devices and replace ECG and EEG machines. To fortify the capability of this department, spirometers, audiometers, and electromyographs will be procured also.

10) Administration Department

The lecture hall in the Kzylorda Regional Medical Center is a stair-structure hall with 250 seats. It is used frequently for conferences and lectures on health and medicine not only for the Kzylorda Regional Medical Center but also for the health related meeting and seminar of Kzylorda region. Table-9 shows the frequent usage of the lecture hall from January 2001 to June 2001, when this survey was conducted.

Currently, this hall is equipped only with an OHP, which is inadequate to effectively present information and materials for conferences and seminars. This project will procure TV monitors, lecturescopes, and video projectors to enhance the effectiveness of conferences and lectures.

Table-9 : Usage of Lecture Hall (January – June, 2001)

Purpose	No.
Province level health meeting	8
Hospital level meeting	9
Academy level meeting	6
Medical Doctor's Conference	32
Nurse's Conference	6
Other	8
Total	69

Source : Kzylorda Regional Medical Center

11) Laboratory Department

This department has the central clinical examination room, as well as a branch room at each of the Pediatrics and Adult Internal Medicine Departments. The central clinical examination room is divided into Hematology, General Analysis, and Biochemistry Sections. Bacteriology Section will be newly established.

Table-10 : Number of Staff at Laboratory Department

	Central laboratory	Internal Medicine	Pediatric	Infectious Disease Hospital
Laboratory Dr.	1	1	1	
Serological	1	1	1	
Immunoassay	1			
Biochemical	2			
Other	1 (trainee)			1
Lab. technicians	4	2	3	
Serological	4	2	3	
Urine	1	1	1	
Biochemical	2	2		
Immunoassay	1			
Others	1		1	

Source : Kzylorda Regional Medical Center

Hematology Section

Red blood cell count, leukocyte count, hematocrit, differential leukocyte count, and other types of blood tests are conducted in this section. More than 700 tests are conducted daily (2000), about 85% of which are blood count tests. It is equipped with minimum instruments to conduct manual tests, such as Neubauer hemocytometer, leukocyte analysis counter, and microscope, which, however, are more than 10 years old and severely superannuated, affecting the efficiency and accuracy of tests. In order to improve the efficiency and accuracy of tests, an automatic blood cell counter and binocular microscopes will be procured.

General Analysis Section

Of the general analyses (urinalysis, fecal examination, etc.) conducted in this section, measurement of hemoglobin in the urine uses a calorimeter in the Hematology Section. Urinalysis (general characteristics, bile, protein, and glucose) accounts for 93% of general examinations, which are done manually for the most part. It is desirable to automate the urinalysis process, as more than 1,000 urine tests are conducted (2000). However, expendable supplies (test strips) needed for an automatic urinalysis device are not being sold in Kzylorda City and hard to obtain. In addition, daily use of such automatic devices would substantially increase the maintenance cost. Therefore, the project will exclude the automatic devices and procure only a centrifuge and other basic equipment.

Biochemistry Section

The Biochemistry Section has two rooms, conducting serum separation and analyses respectively. Existing equipment consists of an incubator for clotting test, calorimeter, spectrophotometer, and centrifuge, all of which are more than 10 years old and severely antiquated. This section conducts more than 130,000 tests annually, and is being required to produce more accurate test results more

efficiently. The Tuberculosis Hospital within Kzylorda city is equipped with an automatic biochemical analyzer, for which the hospital receives comprehensive technical support and a continuous supply of reagents from the manufacture's agent in Almaty city.

Unlike other laboratories, where only a few particular types of tests are performed, this section conducts a variety of tests evenly. For electrolyte analysis, it borrows the electrolyte analyzer of the laboratory in the Reanimation Department. Taking into account the demand for biochemical tests and maintenance of equipment, introducing a tabletop-type biochemical analyzer will be appropriate for this section.

For electrolyte analyses, this section currently shares an electrolyte analyzer with the laboratory of the Reanimation Department. About 20,000 electrolyte analyses were conducted in 2000, indicating the frequent usage and high demand for the electrolyte analyzer. To strengthen the testing capability, this project will procure basic equipment, such as automatic biochemical and electrolyte analyzers, as well as spectrophotometer, and micropipette set.

Bacteriology Section

This section will be excluded from this Project, as all equipment items necessary for this section have already been procured by the Kzylorda Regional Medical Center.

12) Otorhinolaryngology Department

The Otorhinolaryngology Department is the only otorhinolaryngology clinic in Kzylorda Oblast. It has 25 beds and, as mentioned earlier, shares sick rooms with the Dental Department with 20 beds. It is staffed with three otolaryngologists and ten nurses, who also work at the Dental Department. The department accommodates 1,301 inpatients annually (2000) at a nearly 100% bed occupancy rate almost constantly and treats about 40 outpatients on the daily average. 744 operations were performed in 2000, which mainly consisted of nasal septotomy, tonsillectomy, and tonsil dissection.

The department shares the equipment with the Surgical Department and does not possess its own equipment for otorhinolaryngology. To further strengthen the activities of the department, this project will procure basic otorhinolaryngological instruments, such as ENT treatment units, ENT instrument sets, rhino-laryngo fiberscopes, suction units, and ultrasonic nebulizers.

13) Urology Department

This department has 40 beds and is the only urology clinic in Kzylorda region. It handles 90 to 100 inpatients and 40 to 50 outpatients on the monthly average. There said to be many patients with urinary calculus in Kzylorda region because of poor water quality. To diagnose urinary

calculus, the department mainly uses ultrasonic devices and X-ray examination (including fluoroscopy). For removing stones, abdominal section or massaging to encourage natural passing is performed according to their sizes. The numbers of urological disorders are outlined in Table - 11/12.

Table-11: Number of Urological Cases (2000)

Diseases	Numbers	Rate
1Uric acid calculus	96	13.4%
9Spermatic varicocele	86	12.0%
kidney colic	76	10.6%
Prostatitis	40	5.6%
Orchitis	29	4.0%
Prostate adenoma	25	3.5%
Renal contusion	18	2.5%
Other	349	48.5%
Total	719	

Source : Kzylorda Regional Medical Center

Table-12 : Number of Urological Operations (2000)

Operation	Numbers	Rate
Spermatic varicocele	86	26.1%
Adenomyomaexploratory	36	10.9%
Renolithotomy	30	9.1%
Pyelolithotomy	20	6.1%
Renal resection	15	4.6%
Other	142	43.2%
Total	329	100%

Source : Kzylorda Regional Medical Center

The existing equipment consists of an examination table and some instruments for basic treatment. The examination table is essential for effective diagnosis and treatment of urological problems. The existing table is aged and cannot sufficiently hold the patient in a fixed position. Most of the treatment offered in this department is related to calculi, resulting in 181 operations and 330 cases of conservative therapy. Lithotripter requested by the department is a new type of equipment to Kzylorda region. There are nine such devices in Kazakhstan, two in Astana, three in Almaty, and one each in East Kazakhstan, Karaganda, Kustanay, and Chimkent. The closest facility is the Chimkent Province Hospital in South Kazakhstan, which is six hours away by car and too far away to transfer patients. Considering the facts that the urologists in the department have the experience in operating the equipment in Almaty, and that the demand for it is reasonably high, this project will procure lithotripters. In addition, to fortify the capability of this department, cysto-urethroscopy sets and forceps will be provided for the operation rooms.

14) Ophthalmology Department

The Municipal Ophthalmology Hospital with 75 beds was closed down in August 2000 and integrated into the Ophthalmology Department in the former Kzylorda General Hospital with 40 beds. It has three satellite clinics within Kzylorda region and is staffed with five ophthalmologists and 16 nurses. According to the record between August and December 2000, the number of inpatients was 466 at the bed occupancy rate of 75% and at the bed turnover ratio of 10.8%. This department examines an average of 15 to 30 patients per day (of which six are for eyeglass

adjustment). Most of the inpatients are sufferers of glaucoma or cataract. The project will procure equipment for testing and treatment to fortify these activities.

15) Rehabilitation Department

The Rehabilitation Department consists of Hydrotherapy, Physical Therapy, and Exercise Therapy Sections and is staffed with two physiotherapists, two physical therapists, one exercise therapist, and three hydrotherapists.

Most of the patients treated in this department suffer from neurosurgical conditions or external injuries. About 2,500 patients receive physical therapy, and about 5,000 undergo exercise therapy annually (2000). The department is equipped with electric stimulators, bicycle exercisers, rowing machines, stall bars, iron dumbbells, exercise balls, etc. Because basic instruments for exercise therapy are already in place, the equipment plan will focus on equipment for hydrotherapy and physical therapy.

16) Garages

Before Kazakhstan's independence until around 1994, the target facility was using airplanes and helicopters to provide medical services in remote areas and the education and training of medical staff in local districts. However, after the country's independence, use of such aircraft became increasingly difficult because of limited budgets, and the facility is now using its own ambulance cars to transfer patients and to dispatch doctors to its satellite clinics.

The hospital currently owns four ambulance cars, three of which are 1-box type 4WD vehicles made in the former Soviet Union but are not equipped with stretchers and other special equipment needed for ambulance cars. The remaining one is a relatively new 1-box type 2WD ambulance model. All of the three 4WD vehicles have expired their service lives, and two cars have done more than 300,000 kilometers of mileage and tend to break down often.

The arterial road along the Syrdarja River that stretches 1,100 kilometers east and west from Yanoglukanski district to the Aral Sea is paved. However, most of the roads in the desert area stretching north and south for about 700 kilometers are unpaved. Since the access to the lower-level medical facilities scattered over this area is difficult, the vehicles should have the capability to transfer emergency patients swiftly on rough roads. Therefore, this project will replace the two vehicles, the mileage of which has exceeded 300,000 kilometers.

17) Pharmacy Department

This department prepares parenteral solutions, oral medicines, antiseptic solutions, and other fluids used in the hospital. It produces about 700 liters of fluids per day, of which 400 liters are

consumed on the daily average. Medicinal fluids include glucose solution, normal saline solution, insulin, potassium chloride, bicarbonate, and sedatives. Antiseptics include hydrogen peroxide and formaldehyde solutions. Currently, most of the tasks ranging from measurement and preparation of solutions, and sterilization and drying of glass bottles to filling bottles with solutions and attaching labels to them are done manually. Since the department makes drug solutions that are injected directly into patients' bodies, securing of distilled water with high cleanliness will be very important considering the water pollution of the area. To improve the accuracy of the current manufacturing process, a water distiller, precision balance, and hot air sterilizer should be included in the equipment plan.

18) Pathology Department

This department serves as the pathology center of Kzylorda Region and covers the entire region. It is staffed with two pathologists and six technicians, conducting about 25,000 tests annually (2000), of which about 2.4% or 600 tests are for the Medical Center.

The existing microtome is more than 30 years old and cannot slice sufficiently thin samples. Also, the existing microscopes are of monocular type that uses natural light and are not adequate for precise microscopy. Since pathological examinations are crucial for accurate diagnosis, they require precision instruments. To improve the diagnostic function, this project will procure a microtome, binocular microscopes, and autopsy set.

(2) Equipment Plan

The relevance of the equipment plan is shown in Table-13. The list of the equipment including the amount for each department is shown in Table-14. Table-15 shows specifications/components of major equipment.

Table-13: Relevance of the equipment plan

Deletion rules

- a Duplicates the existing equipment in the same clinical department,
- b Can be provided as a component of another equipment unit,
- c Cannot be handled at the current technical level of Kyzlorda Regional Medical Center,
- d Requires high maintenance costs that would create financial burden on Kyzlorda Regional Medical Center,
- e Requires spare or consumable parts that cannot be easily obtained locally,
- f Can be purchased on the recipient side's own account,
- g Will unlikely bring about significant benefits
- h May cause environmental pollution

Department	Item	Equipment	Priority	Requested Qty	Existing Equipment/Qty/Condition : > 3years : 4-10years : < 10years White: function, Black: not function	Deletion	Renewal Add Newly introduced	Qty adequate excess insufficiency	Planned Qty	Summary of Deletion and alteration
A. Hemodialysis Dept. B. Surgery Dept.	A-01	Haemodialysis Unit	A	5	2				3	Judged from number of patients
	B-01	Electrosurgical Unit	A	9	3				6	To be planned 6 rooms judged from number of operations
	B-02	Dermatome	A	1					1	
	B-03	Operating Light	A	9	4				6	To be planned 6 rooms judged from number of operations
		Surgical Scrub Station	A	6		a			0	Duplicates the existing equipment
	B-04	Patient Monitor	A	9					6	To be planned 6 rooms judged from number of operations
	B-05	Defibrillator	A	5					3	To be shared all operation rooms
	B-06	Anaesthetic Unit (A)	A	8	4				5	To be planned 6 rooms judged from number of operations
	B-07	Anaesthetic Unit (B)	A	1					1	
	B-08	Universal Operation Table	A	9	5				6	To be planned 6 rooms judged from number of operations
	B-09	Suction Unit (A)	A	9	4				6	To be planned 6 rooms judged from number of operations
B-10	X-ray Unit, Surgical	A	1					1	To be shared all operation rooms	
B-11	Instruments Set	A	1					1		
	Bone Saw	A	1		b			0	Can be provided as a component of Item B-12	
B-12	Bone Hand Drill	A	1	2				1		
B-13	Operation Microscope for ENT	A	1					1		
B-14	Laryngoscope	A	9	1				6	To be planned 6 rooms judged from number of operations	
B-15	Cysto-urethroscope set	A	1					1		
B-16	Cysto-urethroscope set, child	A	1					1		
	Resectoscope	A	1		b			0	Can be provided as a component of Item B-15	
B-17	Autoclave	A	1					1		
	Emergency Set	A	1		f			0	Can be purchased on the recipient side's own account	
	Head Light	A	9		f			0	Can be purchased on the recipient side's own account	
	Instruments table	A	18		f			0	Can be purchased on the recipient side's own account	
	Instruments Drum Set	A	1		f			0	Can be purchased on the recipient side's own account	
	Mayo Table	A	9		f			0	Can be purchased on the recipient side's own account	
B-18	Mobile UV lamp	A	9	5				6	To be planned 6 rooms judged from number of operations	
	Perforator	A	2		a			0	As same as Item B-12	
B-19	Infant Incubator	A	1					1		
B-20	Laparoscope, Nerosurgery	A	1					1		
C-01	Dental Unit	B	2	2				1		
	X-ray Film Processor	B	1					0	Duplicates the existing equipment	
	Dental Treatment Instrument Set	B	3		g			0	Can be provided as a component of Item C-03	
	Dental Laboratory Micromotor	B	2		g			0	To be excluded dental/dental lab equipment	
C-02	Autoclave	B	1					1		
	Ultrasonic Scaler	B	1					0		
	Hydraulic Flask Press	B	1	1	g			0	To be excluded dental/dental lab equipment	
	Dental Treatment Cabinet	B	2		g			0		
	Light Polymeriser	B	1		g			0		
C. Dental Dept.										

Department	Item	Equipment	Priority	Requested Qty	Existing Equipment/Qty/Condition : > 3years : 4 10years : < 10years : > 3years : 4 10years : < 10years White: function, Black: not function	Deletion	Renewal Add Newly introduced	Qty adequate excess insufficiency	Planned Qty	Summary of Deletion and alteration
		Furnace	B	1	1	g			0	To be excluded dental/lab equipment
	C-03	Instruments Set (extraction)	B	3					1	Duplicates the existing equipment
	C-04	Instruments Set (dental surgery)	A	2					1	Duplicates the existing equipment
		Laser Unit	B	1		g			0	
		Dental Coagulation Unit	B	1		g			0	
		Occludator	B	1		g			0	
		Automatic Casting Unit	B	1		g			0	To be excluded dental/lab equipment
		Torch	B	1	1	g			0	
		Sand Blaster	B	1		g			0	
D. X-Ray Diagnostic Dept.	D-01	X-ray Unit	B	1	4				1	
	D-02	X-ray Unit, Fluoroscopy	A	1	4				1	
		X-ray Unit, Urology	A	1		a			0	Duplicates the requested equipment
	D-03	X-ray Unit, Mobile	A	2	1				2	
				1					0	Requires high maintenance costs
	D-04	X-ray Unit, Mammography	B	1	1				1	
	D-05	X-ray unit, Panoramic	A	1					1	
	D-06	X-ray Film Processor	A	2					2	
	D-07	X-ray Film Illuminator	B	4	2				2	Duplicates the requested equipment
	D-08	X-ray Accessories	B	5					1	Can be provided as a component of another equipment unit
E. Pediatric Dept.	E-01	EEG	A	1					1	
	E-02	Ultrasound Apparatus, portable	A	1	1				1	
	E-03	Syringe Pump	A	1	1				1	
	E-04	Defibrillator	A	1					1	
	E-05	ECG	A	1					1	
	E-06	Suction Unit (B)	A	4	5				5	To be planned 5 categories of Pediatric
	E-07	Weighing Scale, Infant	A	5					5	
	E-08	Diagnostic Set	A	5					5	
	E-09	Pulseoxymeter	A	1					1	
	E-10	Laryngoscope Set Miller's	A	4					5	To be planned 5 categories of Pediatric
		Minor Surgery Set	A	5		f			0	Can be purchased on the recipient side's own account,
	E-11	Hot Air Sterilizer	A	2	4				2	
	E-12	Oxygen Inhalation Set	A	3					3	
		Sphygmomanometer	B	5		f			0	Can be purchased on the recipient side's own account,
		Stethoscope	B	5		f			0	Can be purchased on the recipient side's own account,
	E-13	Ultrasonic Nebulizer	A	2	1				2	
F. Perinatal Center	F-01	Patient Monitor	A	3					2	Judged from number of patients
		Ultrasound Apparatus, portable	A	1	1	a			1	Duplicates the requested equipment
	F-02	Fetal Monitor	A	1					1	
	F-03	ECG	A	1					1	
	F-04	Phototherapy Unit	A	3	2				3	Judged from number of patients
	F-05	Transportation Incubator	A	1					1	
	F-06	Neonatal Monitor	A	2					2	
	F-07	Weighing Scale, Infant	A	6	1				2	
	F-08	Infant Warmer	A	5					3	Judged from number of patients
	F-09	Ultrasonic Nebulizer	A	1					1	

Department	Item	Equipment	Priority	Requested Qty	Existing Equipment/Qty/Condition : > 3years : 4 10years : < 10years : > 3years : 4 10years : < 10years White: function, Black: not function	Deletion	Renewal Add Newly introduced	Qty adequate excess insufficiency	Planned Qty	Summary of Deletion and alteration
	F-10	Oxygen Tent	A	1					1	
	F-11	Infant Incubator	A	6	6				6	
	F-12	Pulseoxymeter	A	2					2	
	F-13	Examination unit Gynaecology	A	1					1	
	F-14	Delivery and Operating Table	A	2					1	
	F-15	Obstetric and Gynecology Instruments Set	A	5					2	
	F-16	Resuscitator	A	2					2	
	F-17	Bilirubinmeter	A	2					1	To be shared in perinatal center
	F-18	Hot Air Sterilizer	A	1					1	
	F-19	Oxygen Inhalation Set (A)	A	3					2	To be shared in perinatal center
	F-20	Fetal Doppler	A	1					1	
	F-21	Colposcope	A	1					1	
G. Reanimation Dept.	G-01	ICU Bed	B	22					11	To be planned 11 beds judged from number of operations
	G-02	Transcutaneous Monitor	B	3					1	Judged from number of patients
	G-03	Patient Monitoring System	A	2	1				1	To be planned 11 beds judged from number of operations
	G-04	Ventilator	A	11	3				4	Judged from number of patients
	G-05	Defibrillator	A	3	1				1	Judged from number of patients
	G-06	Blood Gas Analyser	A	1	2				1	
	G-07	Suction Unit (A)	A	6	1				3	Judged from number of patients
	G-08	Oxygen Inhalation Unit (B)	B	3					11	To be planned 11 beds judged from number of operations
	G-09	Low Pressure Continuous Suction Unit	A	3					1	Judged from number of patients
	G-10	Ultrasonic Nebulizer	A	11	1				4	Judged from number of patients
	G-11	Syringe Pump	B	22					11	To be planned 11 beds judged from number of operations
	G-12	Blood Warmer	B	3					1	Judged from number of patients
	G-13	Ventilator, Infant	A	1					1	
	G-14	Infant Incubator	A	1	1				1	
	G-15	Weighting Scale, Infant	A	1	1				1	
	G-16	Lift Scale	B	1					1	
	G-17	Laryngoscope	B	5	1				1	Judged from number of patients
G-18	Blood Refrigerator	B	1					2		
G-19	Bed for burn treatment	A	1	1				1		
		Bioclean Room		1					0	Duplicates the requested equipment
G-20	Pulseoxymeter		A	6					3	Judged from number of patients
G-21	Resuscitator		A	4					4	Judged from number of patients
G-22	Patient Monitor		A	11					3	Judged from number of patients
H-01	Gastrointestinal fiberoscope		A	1	2				1	
H-02	Gastrointestinal fiberoscope, child		A	1					1	
H-03	Duodenofiberoscope		A	1					1	
H-04	Colonofiberoscope		A	1	1				1	
H-05	Bronchofiberoscope		A	2					1	Judged from number of patients
H-06	Bronchofiberoscope, child		A	1					1	
		Endoscopic Trolley		A	2				0	Can be provided as a component of each fiberoscope
H-07	Endoscope Cabinet		A	2					2	
H-08	Electrosurgical Unit for Endoscopy		A	3	1				1	
		Disinfection Trolley		A	10				0	Can be purchased on the recipient side's own account.
H-09	Endoscopy Table		A	4	1				4	
H-10	Endoscopy TV system		A	1					1	

Department	Item	Equipment	Priority	Requested Qty	Existing Equipment/Qty/Condition : > 3years : < 4 10years : < 10years : > 3years : < 4 10years : < 10years White: function, Black: not function	Deletion	Renewal Add Newly introduced	Qty adequate excess insufficiency	Planned Qty	Summary of Deletion and alteration	
I. Functional Examination Dept.	I-01	ECG	A	2	2				1	Duplicates the requested equipment	
	I-02	Spirometer	A	1					1		
	I-03	EEG	A	1	1				1		
	I-04	EMG	A	1					1	To be shared in Functional examination Dept.	
	I-05	Ultrasound Apparatus (A)	A	1	1				1		
	I-06	Ultrasound Apparatus (B)	A	3	1				1	Duplicates the requested equipment	
	I-07	Pulseoxymeter	A	5		b			0	To be planned in Reanimation Dept.	
	I-07	Audio meter	A	2	1				1	Judged from number of diagnosis room	
	I-07	Blood Pressure Monitor	A	15		g			0	Will unlikely bring about significant benefits	
	I-01	pH-meter	A	1					1		
	I-02	Bloodcell Counter	A	1	1				1		
	I-03	Biochemical Analyser	A	1					1		
	I-04	Electrolyte analyzer	B	1					1	To be changed from Blood gas analyzer to Electrolyte analyzer	
	I-05	Centrifuge	A	2	3				2		
	I-06	Micropipette Set	A	2					1	To be adjusted contents	
J. Laboratory Dept.	J-06	Laboratory Instrument Set	B	1		f			0	Can be purchased on the recipient side. Is own account.	
	J-07	Balance	A	2	1				2		
	J-07	Urine Analyser	B	1		d,e			0	Requires high maintenance costs	
	J-08	Hematocrite Centrifuge	A	3					1		
	J-09	Hot Air Sterilizer	A	2					2		
	J-10	Binocular Microscope	A	2	5				5		
	J-11	Tip Washer	A	1		f			0	Can be purchased on the recipient side. Is own account.	
	J-11	Leucocyte Counter	A	10	2				5	To be planned the same Qty of item J-10	
	J-12	Coagulometer	B	1	1				1		
	J-13	Spectrophotometer	B	1	1				1		
	J-14	Magnetic Stirrer	A	1					1		
	J-15	Refrigerator	A	3					3		
					1		c			0	Will unlikely bring about significant benefits, cannot be handled at the current technical level of Kyzlorda Regional Medical Center
					1		c			0	
					1		c,d			0	
				1		c,d			0		
K. Administration Dept.	K-01	TV monitor	B	1					1		
	K-02	Lecturescope	B	1					1		
	K-03	Video Projector	B	1					1		
L. Otorhinolaryngology Dept.		Ultrasound Apparatus, ENT	B	1		a			0	To be sheared another requested item	
	L-01	ENT Instrument Set	A	2					2		
	L-02	Rhino-Laryngo Fiberscope	A	1	1				1		
	L-03	ENT Treatment Unit	A	2					1	Judged from number of diagnosis room	
	L-04	Suction Unit (B)	A	1					1		
M. Urology Dept.	L-05	Ultrasonic Nebulizer	A	1					1		
	M-01	Examination Table, Urology	B	1	1				1		
N. Orthopedics Dept.	M-02	Lithotripter	A	1					1		
	N-01	Orthopedic Table	A	1					1		
	N-02	Mechanical Therapy Apparatus	A	2					1	Judged from number of patients	
	N-03	Arthroscopy Set	A	1					1		

Department	Item	Equipment	Priority	Requested Qty	Existing Equipment/Qty/Condition : > 3years : > 4 10years : < 10years : > 3years : > 4 10years : < 10years White: function, Black: not function	Deletion	Renewal Add Newly introduced	Qty adequate excess insufficiency	Planned Qty	Summary of Deletion and alteration
O. Ophthalmology Dept.	O-01	Fundus Camera	B	2					1	Judged from number of analysis
	O-02	Projection Perimeter	B	1	2				1	
	O-03	Ophthalmoscope	B	2	2				2	
	O-04	Ultrasound Apparatus, Ophthalmology	A	1					1	
	O-05	Tonometer	A	1					1	
	O-06	Trial Lens Set	B	3	2				1	Judged from number of analysis
	O-07	Instrument Set (Ophthalmic Surgery)	A	2					2	
	O-08	ND-YAG Laser	A	1					1	
	O-09	Slit Lamp	A	1	3				1	
P. Rehabilitation Dept.	P-01	Hydro Bath	B	5					2	Judged from number of patients
	P-02	Extraction Unit	B	1					1	
	P-03	Treadmill	B	2	2				1	Duplicates the existing equipment
R. Garages	R-01	Ambulance (Jeep Type)	A	2	2				2	
	R-02	Ambulance (Minibus Type)	A	2	2				0	Duplicates the existing equipment
S. Pharmacy Dept.	S-01	Water Distiller	A	1	1				1	
	S-02	Hot Air Sterilizer	A	1	2				2	
	S-03	Autoclave, Vertical	A	1	1				1	
	S-04	Balance	A	1					1	
T. Pathology Dept.	T-01	Microtome	A	3	2				2	Duplicates the existing equipment
	T-02	Binocular Microscope	A	2	2				2	
	T-03	Fluorescence Microscope Autopsy Instrument Set	A	1					0	Will unlikely bring about significant benefits
			A	2				2		

Table-14 : List of the equipment

Department	Item No.	Equipment	Qty
A. Hemodialysis Dept.	A-01	Hemodialysis Unit	3
B. Surgery Dept.	B-01	Electrosurgical Unit	6
	B-02	Dermatome	1
	B-03	Operating Light	6
	B-04	Patient Monitor	6
	B-05	Defibrillator	3
	B-06	Anaesthetic Unit (A)	5
	B-07	Anaesthetic Unit (B)	1
	B-08	Universal Operation Table	6
	B-09	Suction Unit (A)	6
	B-10	X-ray Unit, Surgical	1
	B-11	Instruments Set	1
	B-12	Bone Drill Set	1
	B-13	Operation Microscope for ENT	1
	B-14	Laryngoscope	6
	B-15	Cysto-urethroscope set	1
	B-16	Cysto-urethroscope set, child	1
	B-17	Autoclave	1
	B-18	Mobile UV lamp	6
	B-19	Infant Incubator	1
	B-20	Laparoscope, Neurosurgery	1
C. Dental Dept.	C-01	Dental Unit	1
	C-02	Autoclave	1
	C-03	Instruments Set (extraction)	1
	C-04	Instruments Set (dental surgery)	1
D. X-Ray Diagnostic Dept.	D-01	X-ray Unit	1
	D-02	X-ray Unit, Fluoroscopy	1
	D-03	X-ray Unit, Mobile	2
	D-04	X-ray Unit, Mammography	1
	D-05	X-ray unit, Panoramic	1
	D-06	X-ray Film Processor	2
	D-07	X-ray Film Illuminator	2
	D-08	X-ray Accessories	1
E. Pediatric Dept.	E-01	EEG	1
	E-02	Ultrasound Apparatus, portable	1
	E-03	Syringe Pump	1
	E-04	Defibrillator	1
	E-05	ECG	1
	E-06	Suction Unit (B)	5
	E-07	Weighing Scale, Infant	5
	E-08	Diagnostic Set	5
	E-09	Pulseoxymeter	1
	E-10	Laryngoscope Set	5
	E-11	Hot Air Sterilizer	2
	E-12	Oxygen Inhalation Set	3
	E-13	Ultrasonic Nebulizer	2
F. Perinatal Center	F-01	Patient Monitor	2
	F-02	Fetal Monitor	1
	F-03	ECG	1
	F-04	Phototherapy Unit	3
	F-05	Transportation Incubator	1
	F-06	Neonatal Monitor	2
	F-07	Weighing Scale, Infant	2
	F-08	Infant Warmer	3
	F-09	Ultrasonic Nebulizer	1
	F-10	Oxygen Tent	1
	F-11	Infant Incubator	6
	F-12	Pulseoxymeter	2
	F-13	Examination unit Gynaecology	1
	F-14	Delivery and Operating Table	1
	F-15	Obstetric and Gynecology Instruments Set	2
	F-16	Resuscitator	2
	F-17	Bilirubinmeter	1
	F-18	Hot Air Sterilizer	1
	F-19	Oxygen Inhalation Set (A)	2
	F-20	Fetal Doppler	1
	F-21	Colposcope	1
G. Reanimation Dept.	G-01	ICU Bed	11
	G-02	Transcutaneous Monitor	1
	G-03	Patient Monitoring System	1
	G-04	Ventilator	4
	G-05	Defibrillator	1
	G-06	Blood Gas Analyser	1
	G-07	Suction Unit (A)	3
	G-08	Oxygen Inhalation Unit (B)	11
	G-09	Low Pressure Continuous Suction Unit	1
	G-10	Ultrasonic Nebulizer	4

Department	Item No.	Equipment	Qty
G. Reanimation Dept.	G-11	Syringe Pump	11
	G-12	Blood Warmer	1
	G-13	Ventilator, Infant	1
	G-14	Infant Incubator	1
	G-15	Weighing Scale, Infant	1
	G-16	Lift Scale	1
	G-17	Laryngoscope	1
	G-18	Blood Refrigerator	2
	G-19	Bed for burn treatment	1
	G-20	Pulseoxymeter	3
	G-21	Resuscitator	4
	G-22	Patient Monitor	3
H. Endoscopy Dept.	H-01	Gastrointestinalfiberscope	1
	H-02	Gastrointestinalfiberscope, child	1
	H-03	Duodenofiberscope	1
	H-04	Colonofiberscope	1
	H-05	Bronchofiberscope	1
	H-06	Bronchofiberscope, child	1
	H-07	Endoscope Cabinet	2
	H-08	Electrosurgical Unit for Endoscopy	1
	H-09	Endoscopy Table	4
	H-10	Endoscopy TV system	1
I. Functional Examination Dept.	I-01	ECG	1
	I-02	Spirometer	1
	I-03	EEG	1
	I-04	EMG	1
	I-05	Ultrasound Apparatus (A)	1
	I-06	Ultrasound Apparatus (B)	1
	I-07	Audiometer	1
J. Laboratory Dept.	J-01	pH-meter	1
	J-02	Bloodcell Counter	1
	J-03	Biochemical Analyser	1
	J-04	Electrolyte Analyser	1
	J-05	Centrifuge	2
	J-06	Micropipette Set	1
	J-07	Balance	2
	J-08	Hematrite Centrifuge	1
	J-09	Hot Air Sterilizer	2
	J-10	Binocular Microscope	5
	J-11	Leukocyte Counter	5
	J-12	Coagulometer	1
	J-13	Spectrophotometer	1
	J-14	Magnetic Stirrer	1
	J-15	Refrigerator	3
K. Administration Dept.	K-01	TV monitor	1
	K-02	Lecturescope	1
	K-03	Video Projector	1
L. Otorhinolaryngology Dept.	L-01	ENT Instruments Set	2
	L-02	Rhino-Laryngo Fiberscope	1
	L-03	ENT Treatment Unit	1
	L-04	Suction Unit (B)	1
	L-05	Ultrasonic Nebulizer	1
M. Urology Dept.	M-01	Examination Table, Urology	1
	M-02	Lithotripter	1
N. Orthopedics Dept.	N-01	Orthopedic Table	1
	N-02	Mechanical Therapy Apparatus	1
	N-03	Arthroscopy Set	1
O. Ophthalmology Dept.	O-01	Fundus Camera	1
	O-02	Projection Perimeter	1
	O-03	Ophthalmoscope	2
	O-04	Ultrasound Apparatus, Ophthalmology	1
	O-05	Tonometer	1
	O-06	Trial Lens Set	1
	O-07	Ophthalmic Instruments Set	2
	O-08	ND-YAG Laser	1
	O-09	Slit Lamp	1
P. Rehabilitation Dept.	P-01	Hydro Bath	2
	P-02	Extraction Unit	1
	P-03	Treadmill	1
R. Garages	R-01	Ambulance (Jeep Type)	2
S. Pharmacy Dept.	S-01	Water Distiller	1
	S-02	Hot Air Sterilizer	2
	S-03	Autoclave, Vertical	1
	S-04	Balance	1
T. Pathology Dept.	T-01	Microtome	2
	T-02	Binocular Microscope	2
	T-03	Autopsy Instrument Set	2

Table-15 : Specifications/Components of Major equipment

No.	Equipment	Q'ty	Use	Specification/Components
A-01	Haemodialysis Unit	3	Used when extracorporeal blood circulation is necessary for treating acute renal failure, poisoning, drug overdose, or hepatic failure.	Type: double-pump, Blood flow: 15-500ml/sec, Dialysis flow: 500ml/sec, Temp: 35-39 UF volume: 0-10L, UF setting: 0-4l/hr
B-01	Electrosurgical Unit	6	Used to cut tissues, and perform styptic dissection and coagulation during surgery.	Output: dissection, coagulation, combination, bipolar; Unipolar electrodes (10), Bipolar electrodes (2), Antipode board, Foot switch
B-04	Patient Monitor	6	Used to monitor patient's ECG, blood pressure, respiration, temperature, and other vital signs.	Monitor function: ECG/pulse/respiration, etc., With 9-inch display and alarm
B-05	Defibrillator	3	Used to treat ventricular fibrillation and tachycardia (serious cases of arrhythmia) and atrial fibrillation.	Output: 0-300J, Paddles: for adults & children, Parameters: ECG & pulse, Display: 5 inch, With built-in printer, Power source: AC/DC
B-06	Anaesthetic Unit (A)	5	Used to introduce general anesthesia before operation	Vaporizer: halothane, Flow meter: O ₂ , N ₂ O, Gas supply: cylinder, With artificial ventilator
B-08	Universal Operation Table	6	Accessories for different types of operations will be included.	Hydraulic type
B-10	X-ray Unit, Surgical	1	An X-ray fluoroscopy device to monitor the real-time status of operated lesion during orthopedic surgery.	Motor drive, Tube voltage: 40 - 100 kV, mAs: 0.5-150mAs, Amplifier tube: 9 inch, Display: 15 inch, With image memory function
B-13	Operation Microscope for ENT	1	A microscope used in microsurgery for operating delicate structures that cannot be seen with the naked eye.	Components: microscope frame, mobile stand, binocular tube (surgeon & assistant), still camera, video camera, display; Eye lens: 12.5x, Object lens: 2 types (for orthopedics and plastic surgery); Illuminator: halogen lamp (150W)
B-15	Cysto-urethroscope set	1	Used for examining urethra (upper and lower) and bladder	Cytoscope, illuminator, suction device, various operative attachments
C-01	Dental Unit	1	Used for general dentistry and oral surgery	Electric elevating system with compressor
D-01	X-ray Unit	1	Used for filming bone fractures, chest region, etc.	Standing/lying-position tables, Tube current: 500mA, Tube voltage: 150kV
D-02	X-ray Unit, Fluoroscopy	1	Used for general X-ray filming of bone fracture, chest, and abdomen, and fluoroscopy of gastrointestinal tract, etc.	Components: fluoroscopy table, TV monitor (w/cart), local controller, display (17 inch), amplifier tube (9 inch); Tube current: 600mA; Tube voltage: 150kV
D-03	X-ray Unit, Mobile	2	Used for general X-ray filming of patients who have difficulty walking or strictly confined to bed.	Motor-driven & battery type, Tube voltage: 125kV; Current: 1 to 120 mAs, Power source: AC single phase, Film cassettes: 30 x 40, 24 x 30, 18 x 24, 13 x 18cm
D-04	X-ray Unit, Mammography	1	Used for X-ray filming of the breast.	Tube voltage: approx. 30kv, Tube current: 200~600mA
D-05	X-ray unit, Panoramic	1	A device to take an X-ray photograph of teeth, jaw, and face in	Tube voltage: 60~80Kv, Tube current: approx.10mA, Film size: 150x300mm
E-01	EEG	1	Used to measure electrical impulses produced by patient's brain to detect certain brain disorders.	EEG input: 20 or more channels, CMRR: 100db or up, Display: LCD, Printing: ink recorder, Paper feed speed: 5-50mm/sec, Photic stimulation: auto/manual/random
E-02	ECG	1	Used to diagnose arrhythmia and to assist the diagnosis of coronary artery disease, hypercardia, and electrolyte imbalance.	ECG lead: standard 12 leads, Display: LCD, Wave pattern display: 6 channels, Power source: AC and built-in battery
E-05	Patient Monitor	1	Used to monitor patient's ECG, blood pressure, respiration, temperature and other vital signs.	Monitoring function: ECG/pulse/respiration, etc., With 9-inch display and alarm
F-01	Ultrasound Apparatus, portable	1	Used in general ultrasonic examination of the abdomen and chest, as well as for perinatal examinations.	Scan method: electronic convex, sector, linear, Display mode: B, M, Probe: sector (3.5/7.0MHz), convex (5.0/7.5MHz), Display: black & white

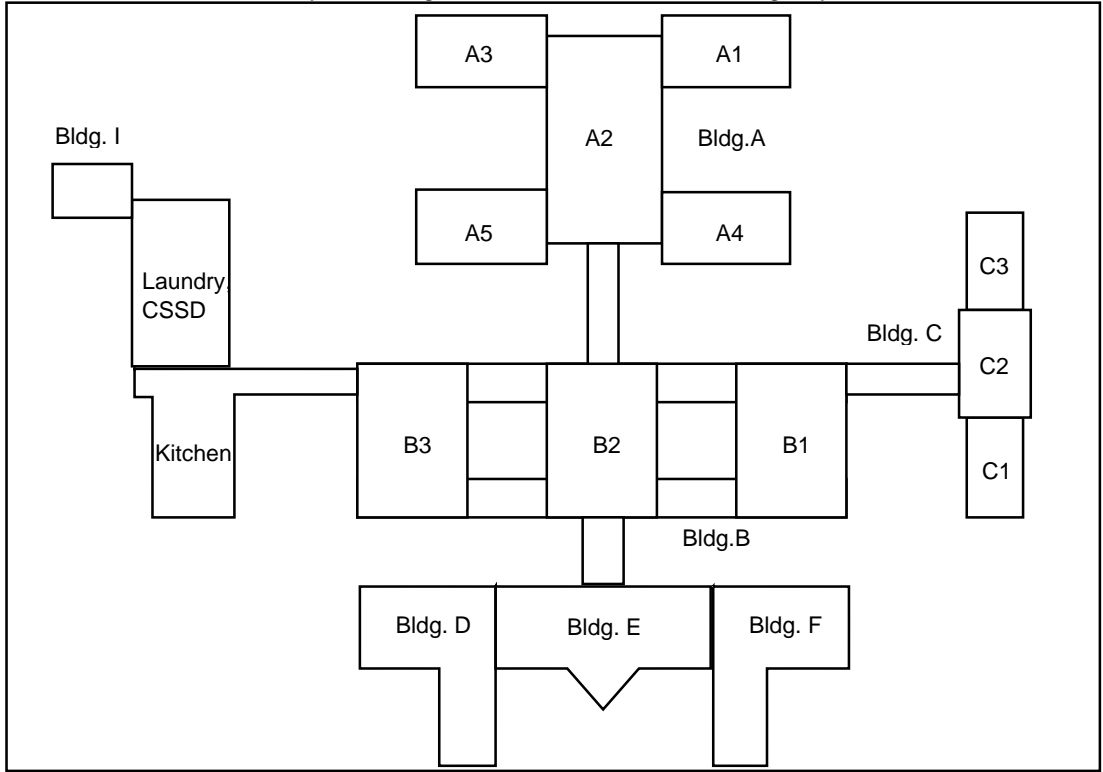
No.	Equipment	Q'ty	Use	Specification/Components
F-03	Fetal Monitor	1	Used to measure the heart rate of the fetus and uterine contraction for the management of safe labor.	Fetal heart rate channel: 1
G-03	Patient Monitoring System	1	A device to monitor patient's ECG, blood pressure, respiration, temperature, and other vital signs in ICU to monitor patient's respiration.	Recording: fetal heart rate, contraction curve
G-04	Ventilator	4	Used to check respiratory function by measuring oxygen and CO2 partial pressure in the blood.	Monitoring function: ECG/pulse/respiration, etc., With 9-inch display and alarm
G-06	Blood Gas Analyser	1	Placed in ICU to monitor infants' respiration.	Application: infants _ adults, Modes: CMV,IMV,SIMV,CPAP, Manual, Ventilation rate: 0 - 1000ml, Respiratory frequency: 0 - 150bpm, Inspiration time: 0.1 - 3.0 sec.
G-13	Ventilator, Infant	1	Used for intensive care of neonates and low birth weight infants.	Measurement items: pO2,pCO2,pH,Na,K,Cl; Measurement method: ion electrode, Sample volume: approx.120 µl
G-14	Infant Incubator	1	A fiberscope used to examine stomach diseases.	Application: neonates, Modes: CMV,IMV,SIMV,CPAP, Manual, Ventilation rate: 0 - 1000ml, Respiratory frequency: 0 - 150bpm, Inspiration time: 0.1 - 3.0 sec.
H-01	Gastrointestinalfiberscope	1	A fibrescope used to examine stomach and duodenum.	Type: single, Display items: body temperature, incubator temperature, oxygen concentration, Temperature setting: servo, Access ports: 6
H-03	Duodenofiberscope	1	A fiberscope used to observe and perform biopsy on the lower digestive tract from the sigmoid colon to the ileocecum.	Endoscope, illuminator, suction unit, operative attachments, examination table, display
H-04	Colonofiberscope	1	Used to examine the lungs and the bronchi and to find/remove foreign bodies in the bronchi.	Gastroscope for adults, illuminator, suction unit, operative attachments, examination table, display
H-05	Bronchofiberscope	1	Used to diagnose arrhythmia and to assist the diagnosis of coronary artery disease, hypercardia, and electrolyte imbalance.	Colonoscope for adults, illuminator, suction unit, operative attachments, examination table, display
I-01	ECG	1	Used to measure electrical impulses produced by patient's brain to detect certain brain disorders.	Bronchoscope for adults, illuminator, suction unit, operative attachments, examination table, display
I-03	EEG	1	Used for non-invasive internal organ examinations and for checking the blood flow in the abdomen and chest.	ECG lead: standard 12 leads, Display: LCD, Wave pattern display: 6 channels, Power source: AC and built-in battery
I-05	Ultrasound Apparatus (A)	1	A device to measure the counts of red blood cells, leucocytes, and hemoglobin. Widely used to perform basic blood tests for a variety of examinations.	EEG input: 20 or more channels, CMRR: 100db or up, Display: LCD, Printing: ink recorder, Paper feed speed: 5-50mm/sec, Photic stimulation: auto/manual/random
J-02	Bloodcell Counter	1	Used to analyze multiple biochemical elements simultaneously in clinical tests. Can also be used for emergency tests.	Application: circulatory system, Scan method: electronic convex, sector, linear, Display modes: B, M, Doppler: color Doppler, Probe: sector (3.5/7.0MHz), convex (5.0/7.5MHz), Display: 9-inch CRT
J-03	Biochemical Analyser	1	A device to measure acid-base/electrolyte balance with ion electrodes.	Tabletop type, Measurement items: WBC/RBC/HGB/HCT/MCV/MCH/MCHC/PLT, etc. With automatic diluter, printer, mixer
J-04	Blood Gas Analyser	1	Uses shock waves to break up calculi for excretion in the urine.	Tabletop type, Optics: photometric, Principle: endpoint/kinetic, Measurement: about 20 items including albumin, ALT, ALP, cholesterol, amylase, Samples: serum/plasma, urine, With automatic diluter and automatic calibrator
M-02	Lithotripter	1		Tabletop type, Measurement parameters: pH/pCO2/pO2, etc. Computation: 20 or more items, With printer and calibration gas cylinder

No.	Equipment	Q'ty	Use	Specification/Components
O-01	Refractometer	1	Used to measure objective refraction and astigmatism.	Calculi examination: X-ray or ultrasound, Shock wave generation: electromagnetic sound, underwater electric discharge, piezoelectric
O-04	Ultrasound Apparatus, Ophthalmology	1	Used to examine neoplastic lesion inside the eye and the eye socket.	Measurement item: curvature radius, astigmatism, refractivity (spherical, astigma)
O-08	ND-YAG Laser	1	Uses a laser beam to coagulate retinal blood vessels, operate glaucoma, and dissect and remove vitreous body.	Mode: B, Wavelength: approx. 10MHz
P-01	Hydro Bath	2	Used to heat, massage, and give resistive muscular exercise to patients.	Laser: NdYAG, Air-cooling, Output: 10mJ
R-01	Ambulance	2	Used to transport patients	Treatment area; whole body, With heater, Timer: 99 minutes, Material: FRP

2-2-3 Basic Design Drawing

(1) Building layout plan

kzylorda Regional Medical Center Building Layout

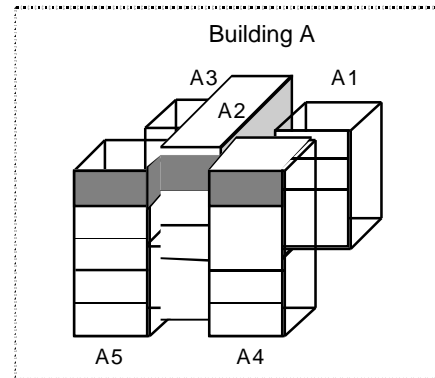


The thick and underlined blocked is scoped in this project

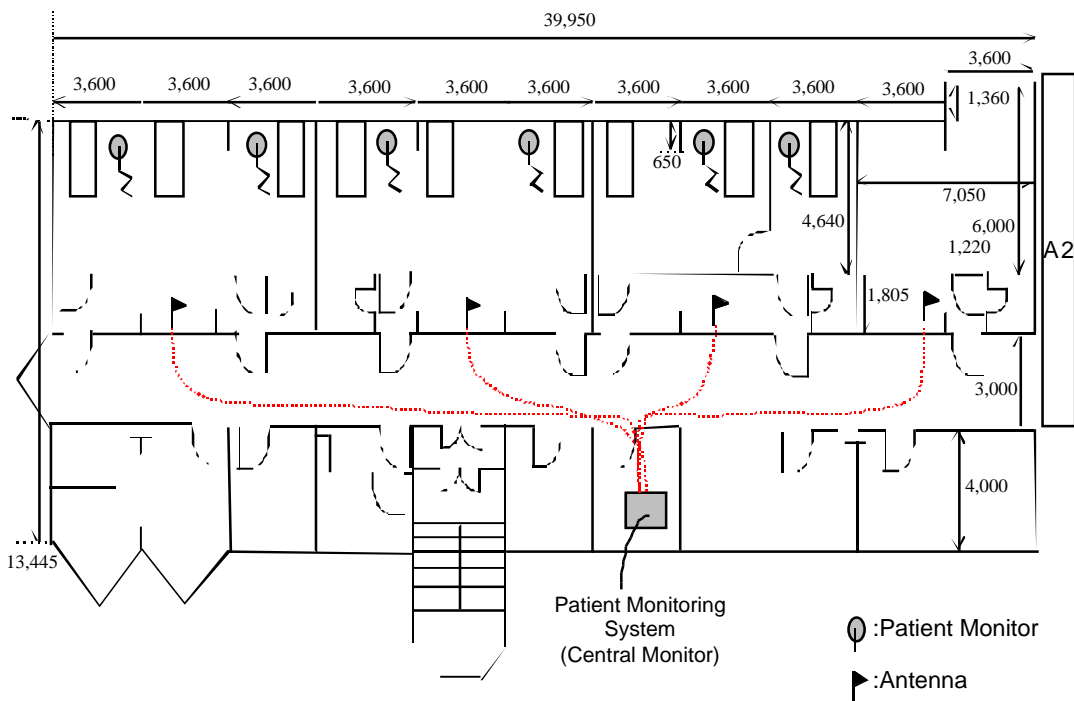
Bldg. A 480 beds			
A1	A4	A5	A3
4F Surgery Dept. II (Infant)	5F ICU 4F Surgery Dept. II (Infant)	5F ICU 4F Surgery Dept. I (Adult)	4F Surgery Dept. I (Adult)
3F Urology Dept.	3F Urology Dept.	3F Oncology	3F Cardiology
2F Ophthalmology Dept.	2F Ophthalmology Dept.	2F Otorhinolaryngology Dept.	2F Dental Dept.
1F Orthpedics Dept.	1F Orthpedics Dept.	1F Cardiology	1F Cardiology
Bldg. B			
B1	B2	B3	
5F CSSD, Hyperbaric therapy	5F Hemodialysis, Operating Room(3)	5F Aseptic Room, Operating Room(6)	
4F Laboratory Dept. (Blood test, General, Biochemical, Bacterial)	4F Adult Rehabilitation	4F PharmacyDept.	
3F Infant Fncional Examination Dept.	3F X-ray Diagnostic Dept.	3F Functional Examination Dept., Endoscopy Dept.	
2F Rehabilitation	2F Cloak, Buffet, Library	2F Radioactive Isotope	
1F Water treatment	1F Diagnostic Room, Emergency Room	1F Blood Bank	
Bldg. C 180 beds			
3F Endocrinology Dept.	Bldg. D (Pediatrics)	Bldg. E	Bldg. F (Pediatrics)
2F Neurology Dept.	3F Clinic 2	3F Administration Dept. (Lecture Hall)	3F Environment Pathology Dept.
1F Gastroenterology Dept.	2F Clinic 1		2F Urology
	1F Neulogy		1F Neonate

(2) Equipment layout plan

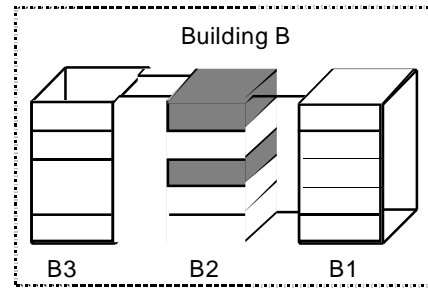
Patient Monitor equipment will be installed on Reanimation department (ICU) as shown below:



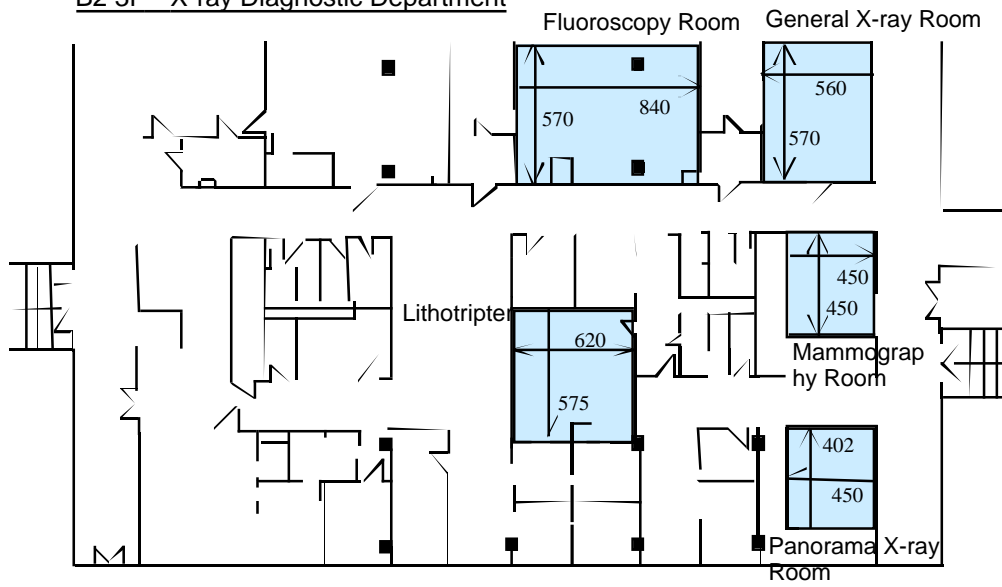
A5 5F ICU



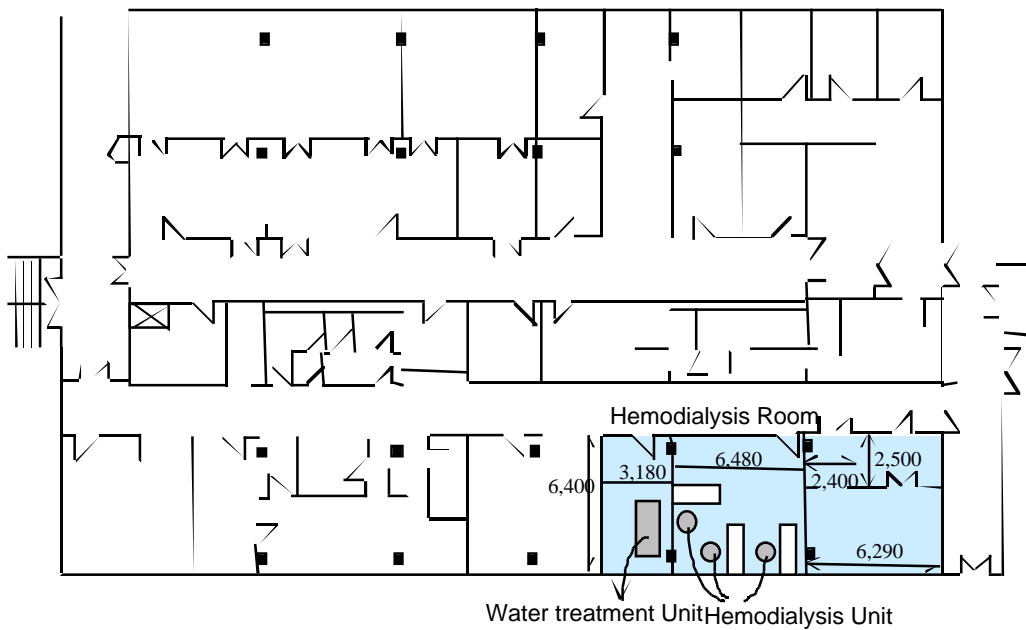
X-ray equipment and lithotripter will be installed on radiology department as shown below:



B2 3F X-ray Diagnostic Department



B2 5F Hemodialysis Department



2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

The project will be implemented within the grant aid framework of the Japanese government according to the following basic guidelines:

Implementation of the project will begin after it is approved by the Japanese Cabinet, the E/N in connection to this project is concluded between the governments of Japan and Kazakhstan, and it is ratified by the Kazakh Parliament.

After the ratification of the project by the Kazakh Parliament, a Japanese consultant firm recommended by the Japan International Cooperation Agency (JICA) will conclude a consultant agreement with the Department of Health of Kzylorda Region. This contract will become effective upon verification by the Japanese government. The consultant will carry out tendering-related tasks and supervise the execution of the project.

Procurement of equipment will be undertaken by a Japanese corporation (supplier) to be selected through tendering. The supplier will conclude an equipment procurement contract with the Ministry of Health of Kazakhstan, which will also become effective upon approval by the Japanese government. The supplier will carry out procurement, transportation, and installation of the equipment and, at the same time, provide guidance with regard to the operation and maintenance of the equipment procured. It will also prepare instruction manuals and other technical documents necessary for the control and maintenance of the equipment after it is procured, as well as a list of manufacturers and local agents.

For the installation, operation, and maintenance of the equipment procured, engineers of the equipment manufacturers or their local distributors will be dispatched to give instructions.

2-2-4-2 Implementation Conditions

The temperatures of Kzylorda Region change greatly by more than 60°C between summer and winter. In winter, the low temperature sometimes drops below -40°C, which could affect the quality of equipment and supplies in transit or storage. Therefore, the implementation schedule will be drafted to avoid the winter season.

2-2-4-3 Scope of Works

(1) Expenses to be born by the Japanese Government

Cost of equipment procurement

Ocean freight and inland transportation cost of equipment to the Kzylorda Regional Medical Center

Cost of equipment installation

Cost of technical explanation with regard to trial run, operation, inspection, and maintenance of equipment.

(2) Responsibilities of the Department of Health of Kzylorda Region

Provision of information and data necessary for equipment installation.

Obtainment of permits necessary for importing the equipment

Preparation of sites where equipment is to be installed.

Securing of space where procured equipment is to be unloaded.

Securing of storage space of equipment before installation.

Securing of passageways through which procured equipment can be carried in

Preparation of primary facilities (electricity, water, sewage)

2-2-4-4 Consultant Supervision

After selecting a procurement company through tendering, the consultant will supervise the procurement activities according to the following procedures:

(1) Procurement Supervision

The consultant will check periodically the procurement, loading, transportation, and installation of equipment by the procurement company and make necessary arrangements to ensure that the procurement will be completed according to the schedule. More specifically, the consultant will have regular monthly meetings with the procurement company to check the progress, give necessary instructions, make necessary adjustments, and require the procurement company to submit monthly progress reports.

(2) Pre-loading Inspection

The consultant firm will dispatch engineers to check the performance and contents of the procured items when they are shipped from the factories to make certain that they conform to the specifications set forth in the procurement contract. A third party may be entrusted to check the items to be shipped against the stipulations in the contract. This kind of inspection will also be conducted for third-country equipment.

(3) Inspection at the time of Installation

Upon installing the equipment in the target facility, the consultant firm will dispatch two engineers, who will check jointly with the representatives of the procurement company and Kazakh counterparts if the equipment installed conforms to the specifications and performance standards

stipulated in the procurement contract.

2-2-4-5 Procurement Plan

Kazakhstan produces no medical devices and supplies and imports them mostly from Russia. Thus, the equipment for this project will be procured basically from Japan, except those items for which distributors are not established in Kazakhstan or Russia. For easier access to maintenance services, such items will be sourced from third-country manufacturers that have service agencies in Kazakhstan or Russia.

Agencies of Japanese, European, and American equipment manufactures are not located in Kzylorda City but are situated in Astana City or Almaty City, both of which are more than 1,000 kilometers away from the Kzylorda Regional Medical Center. Thus, in selecting equipment items, the following considerations should be given:

- The equipment can be maintained at the technical level of the Kzylorda Regional Medical Center.
- The Kzylorda Regional Medical Center should be able to cover the maintenance cost of the equipment.
- Expendable items and spare parts of the equipment should be easily obtainable. Especially, reagents should be obtainable within Kzylorda City if possible.
- The warranty period of the equipment will be one year after delivery, upon expiration of which the Kzylorda Regional Medical Center will be responsible for the maintenance of the equipment.

Japanese and the U. S. A. equipment will be transported by ocean freight to Nakhodka, Russia and therefrom to Kzylorda by train. European-made equipment will be transported from Hamburg, Germany by train also.

2-2-4-6 Quality Control Plan

Medical equipment items to be procured under this project will be selected from ready-made models that have been successfully delivered to medical institutions in various countries. To ensure safety for patients, Japanese equipment shall comply with JIS, and European equipment or US shall comply with BS or DIN standards. As for reagents and other expendable items, multi-purpose types available at the project site shall be selected as much as possible, instead of those of particular brands specified by the equipment manufacturers.

2-2-4-7 Implementation Schedule

The implementation process of this project, which starts after the signing of the Exchange of Notes (E/N) between the two governments and the ratification of the E/N by the Kazakh Parliament, is

divided into two phases of tendering and equipment-procurement/installation. As shown in Figure-1 below, the implementation process is to be completed in ten months after the signing of the E/N.

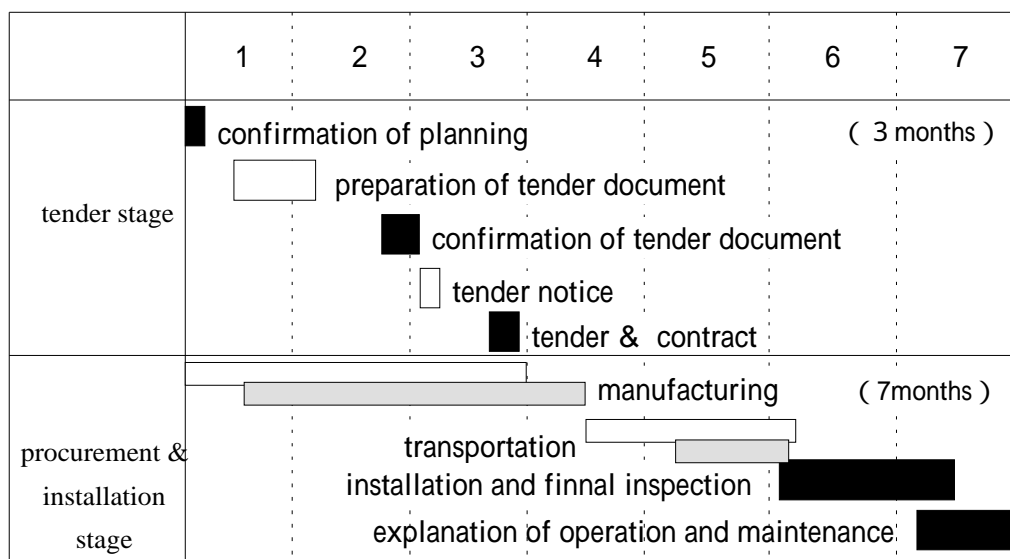


Figure-1: Implementation Schedule

2-3 Obligations of Recipient Country

Obligations and responsibilities of the Kazakh side with regard to this project are described under Section 2-2-4-3 Scope of Works. In reviewing the past three grant aid projects of Japan, it is particularly important to ensure that the following will be implemented properly without delay:

To have the E/N ratified by the Kazakh parliament.

To make necessary arrangements to expedite the procedures of customs clearance and inland transportation of the equipment to be procured.

- Obtain duty-free license from the State Customs Commission
- Obtain import license from the Ministry of Economy and Trade
- Obtain permission from Health Ministry of Kazakhstan to import medical equipment.
- Obtain safety certification from the Standardization Committee
- Obtain radio wave permission from the State Security Commission

To exempt the equipment suppliers and their affiliates from customs duties and other forms of taxation.

To accord Japanese nationals, whose service may be required in connection with this project, necessary facilities and ensure their safety.

To bear expenses necessary for the Banking Arrangement (B/A) and Authorization to Pay (A/P) procedures.

To secure personnel and budget (including maintenance cost) necessary for the efficient implementation of the project.

To obtain other permits and licenses necessary for the implementation of the project.

To disclose necessary documents, records, and other information.

Prior to the installation of the equipment to be procured under this project, the recipient side shall i) remove the existing equipment, ii) secure space for carrying in and installing the equipment, and iii) prepare the site where the equipment will be installed.

2-4 Project Operation Plan

Kzylorda Regional Medical Center entrusts a local private company to control and maintain its medical equipment. This local company is staffed with three electricians and one mechanical engineer and provides 24-hour on-call servicing and periodic inspections. All of these technicians are well versed in medical equipment and clinical engineering and can provide highly advanced technical services. As this contractual relation will be continued for the maintenance of the equipment to be procured under this project, technical training for equipment operation and daily maintenance at the time of equipment handover will be given to the technicians of the local company, as well as the staff of the Kzylorda Regional Medical Center. Because some of the equipment items to be procured under this project will require servicing by the local agents, the cost for such maintenance work will need to be appropriated after the expiry of their warranty periods. Maintenance of utility facilities (water, sewage, electricity, ventilation, and heating) is attended by four engineers of the Facility Department (See Table-16). The current equipment/facility maintenance system is adequately supporting the hospital's medical activities and will be able to continue to do the same after the implementation of the project.

Table-16: Maintenance system

	Water	Electricity	Ventilation	Heating
Engineer	16	14	5 ~ 6	12

Source : Kzylorda Regional Medical Center

Chapter 3 Project Evaluation and Recommendations

Chapter 3 Project Evaluation and Recommendations

3-1 Project Effect

This Project aims to fortify the medical service capabilities of the Kzylorda Regional Medical Center to elevate the medical service level of the entire Kzylorda Region. Listed below is the outcome that is expected to be produced by the implementation of the Project.

1) Direct Effect

- The capabilities of the Kzylorda Regional Medical Center will be enhanced both quantitatively and qualitatively.

Procured equipment will enable the Medical Center to conduct tests and diagnosis more accurately and efficiently to provide comprehensive medical services as the Region's top-level hospital. Also it will perform an increased number of clinical examinations and operations.

- A clearly defined medical referral system will be established in Kzylorda Region.

After the procurement of equipment, an increased number of patients are projected to visit the Medical Center for more accurate and advanced tests, diagnosis, and treatment by the capability of the region's top-level hospital. This will help establish the medical referral system in Kzylorda Region, as the role of each medical facility becomes more clearly defined.

2) Indirect Effect

- The overall health/medical service quality in Kzylorda Region will be improved.

As the function of the Kzylorda Region Medical Center becomes more fortified, it will be able to work more closely with lower-level medical facilities and primary health care institutions, and the needs of the residents will be better met. This will elevate not only the medical service capabilities of the region's top-level hospital but also the entire Kzylorda Region, which will lead to the decrease of infant and maternal mortality rates, as well as the improvement of other health indexes of the region.

In view of the above, this Project is deemed to play an important role in improving the health of the residents of the region. The population that is expected to directly benefit from the Project is estimated at around 600,000, including those suffering poverty. Table-17 below shows how the present conditions will be improved by the implementation of the Project.

Table-17 : Effects and Improvement to be brought by the Implementation of the Project

Present Status and Problems	Solutions to be Offered by the Project (scope of the Project)	Extent of Effects and Improvement
<p>The health/medical sector of Kzylorda Region is extremely underdeveloped compared to other regions. Overall improvement is urgently needed.</p> <p>Although the facilities of the Kzylorda Regional Medical Center have been completed, the Center is struggling to provide adequate medical services as the top referral hospital of the region because of insufficient and deteriorated equipment.</p>	<p>Procurement of medical equipment necessary to enable the Kzylorda Regional Medical Center to function as the top referral hospital of the region (target: 19 departments, no. of equipment items: 128)</p>	<p>As the Kzylorda Regional Medical Center becomes adequately equipped, it will be able to provide more comprehensive medical services as the top referral hospital of the region. As a result, the Center will have more patients referred from lower-level medical facilities and those visiting the Center at their own discretion, consequently performing an increased number of operations and tests.</p> <p>As the Kzylorda Regional Medical Center begins to function fully, it will become able to better accommodate the needs of the local residents by providing improved medical services.</p>

In establishing the indicators to measure the outcome of the Project, we analyzed the indexes that we had obtained during the surveillance study at the project site. Statistically, it is generally more preferable to compare various data with those of the hospitals with comparable scales and capabilities. However, we were unable to establish a control group for this study. Therefore, we decided to use the (Interrupted Grouping Design), in which the Project would be determined to have produced beneficial results if the average indexes have significantly improved after the implementation of the Project. In selecting the indicators, we chose the ones that would be available on a continuing basis and reflect the effects of the Project. Although not mentioned in the table below, external factors (assumptions) that might affect the outcome of the Project were also considered. Table-18 below summarizes the output indicator for each Project goal and purpose.

Table-18 : Examination of Output Indicators

Outline of Project	Indicators	Sources of indicators
Overall Goal: Elevate the overall medical service quality of Kzylorda Region.	Kzylorda Region's: 1. Average life expectancy 2. Infant mortality rate 3. Maternal mortality rate	• Health/Medical Statistics of the Republic of Kazakhstan
Project Purpose: Enhance the medical service capabilities of the Kzylorda Regional Medical Center.	The Kzylorda Regional Medical Center's: 1. No. of patients referred from lower-level facilities 2. No. of in-hospital deaths at Reanimation Dept.	• Medical Statistics of the Kzylorda Regional Medical Center
Outcome of the Project: The Kzylorda Regional Medical Center will be adequately equipped to render enhanced medical services.	The Kzylorda Regional Medical Center's: 1. No. of patients 2. No. of operations 3. No. of clinical tests 4. No. of pathological tests	• Medical Statistics of the Kzylorda Regional Medical Center

We estimated how the indicators would improve after the implementation of the Project according to the following methods:

(1) Overall Goal: Elevate the overall quality of the health/medical sector of Kzylorda Region.

Based on the Health Plan established by the Kazakh Ministry of Health, Kzylorda Region has developed its own health program appropriate for the present status of the region. The health program aims to “maintain and restore the health of the residents” as one of its objectives although no numerical targets has been set. Generally speaking, in order to elevate the health/medical standard of a community, not only its physical and medical aspects but also its social and economic conditions need to be improved. The World Health Organization (WHO) lists three categories of indexes to show the health condition of a population group as follows: 1) infant mortality rate, average life expectancy¹, and other indicators that directly reflect the health condition, 2) indicators to show how extensively the primary health care services are made available, 3) indicators to show the socio-economic condition.

According to the above, it would be difficult to measure the direct effects of providing medical equipment based solely on the morbidity rates of certain diseases, mortality rates, and other biomedical indexes. However, if the health indices improve after the implementation of the

¹ Life expectancy at birth is the average number of years a newborn infant would be expected to live if health and living conditions at the time of its birth remained the same throughout its life. It reflects the health of a country's people and the quality of care they receive when they are sick.

Project, it can be used as one of the factors to determine that the Project has produced beneficial results.

During the surveillance study, we collected the general health statistics of Kzylorda Region (Table –19), which were showing an improving trend in overall health conditions. Unless the social conditions suddenly deteriorate in Kzylorda Region, the improving trend will likely continue in the future. As described in the following paragraphs, the average life expectancy at birth and the infant and maternity mortality rates, which are also used as social development indicators, were chosen to measure the achievement of the overall goal of the Project.

<Projection of Overall Goal Indicators>

The average life expectancy at birth between 2003 and 2008 will be higher than 64.3 that was registered for the period between 1995 and 2000.

The infant mortality rate between 2003 and 2008 will decrease from 22.7 that was registered between 1995 and 2000.

The maternity mortality rate between 2003 and 2008 will decrease from 72.1 that was registered between 1995 and 2000.

These indicators are more readily available than other health statistics that cover the overall health conditions of the entire country of Kazakhstan and can be compared to the average figures and indexes of the whole country and other regions. As projecting the improvement of these indicators numerically is nearly impossible, it will be appropriate to determine the success of the Project based on the increase in the average life expectancy and the decrease in the infant and maternity mortality rates. Also, as it will take a while for the Project to take effect on the living standard of the regional residents, it will be appropriate to evaluate the Project five years after the first operation of the procured equipment.

Table-19: Health indicators of Kazakhstan and Kzylorda Region

Year	National Average				Kzylorda Region			
	1995	1998	2000	1995-2000 average	1995	1998	2000	1995-2000 average
Average life expectancy at birth (year)	63.7	64.4	64.8	64.3	62.9	63.7	64.1	63.5
Infant mortality rate (per 1,000 live births)	27.3	21.4	19.6	22.7	30.7	25.1	23.1	26.3
Maternal mortality rate (per 100,000 births)	77.3	77.5	61.4	72.1	35.8	45.4	51.5	44.2

Source: The Ministry of Health of Kazakhstan

(2) Project Purpose: Enhance the medical service capabilities of the Kzylorda Region Medical Center.

To measure the achievement of the Project Purpose, indicators that mostly reflect the status of the Center's medical service activities were chosen.

<Projection of Project Purpose Indicators>

The average number of patients between 2003 and 2004 who are referred from lower-level medical facilities for more accurate tests and diagnosis will increase from 38.2%, the average figure between 1999 and 2000.

The average death rate at the Reanimation Department between 2003 and 2006 will decrease from 6.36%, the average figure between 1998 and 2000.

Close to 90% of the total patients at the Kzylorda Regional Medical Center were referred from lower-level medical facilities. If the medical service capabilities of the Medical Center are enhanced, even more patients will be referred from lower-level facilities for accurate testing and diagnosis. According to the statistics before the implementation of the Project in 2000, patients who visited the Medical Center for detailed examinations and diagnosis accounted for 42.1% of the total referred patients, which can increase to around 50% after the implementation of the Project. Therefore, it will be appropriate to look into the number of patients seeking for detailed examinations and diagnosis as one indicator to measure the achievement of the Project Purpose. The timing of evaluation will be one year after the completion and handover of the Project (2003). Numerical targets will be set based on the actual records in the past three years (1998 – 2000).

Table-20 : Number of Patients Visiting the Medical Center for Different Purposes

	1999	2000	1999-2000 average
Total no. of patients	17,966	22,422	20,194
No. of referred patients (percentage in the total)	15,693 (87.35)	19,395 (86.50)	17,555 (86.93)
Percentage of patients who came to the Center for detailed examination or diagnosis	35.2%	41.2%	38.2%
Percentage of patients who came to the center for the first medical examination	64.8%	58.8%	61.8%

Source: Kzylorda Regional Medical Center

As the Reanimation Department treats post-surgery patients or inpatients in grave conditions, far more patients leave the department dead than other clinical departments. The death toll in 2000 accounted for about 70% of the total death (113 of 181 deaths). This department provides more advanced medical care than other departments, playing an important role in the postoperative follow-up system. The postoperative death rate of each surgery department of the Kzylorda Regional Medical Center is close to 10% (according to the statistics of the Medical Center), which is probably reflected in the high mortality rate of the Reanimation Department. Therefore, mortality rate of the Reanimation Department will be appropriate as an indicator to measure the improvement of the improvement of medical service capabilities of the target hospital. Table-21 below shows the records of the Medical Center before the implementation of the Project (1998 – 2000). We project that the average death toll will decrease during the 3-year period after the implementation of the Project.

Table-21 : Number of In-Hospital Deaths

	1998	1999	2000	1998-2000 average
No. of total in-hospital deaths	133	182	181	165.3
No. of deaths at Reanimation Dept. (Fatality rate:%)	92 4.70	129 4.50	113 3.90	111.3 4.36

Source: Kzylorda Regional Medical Center

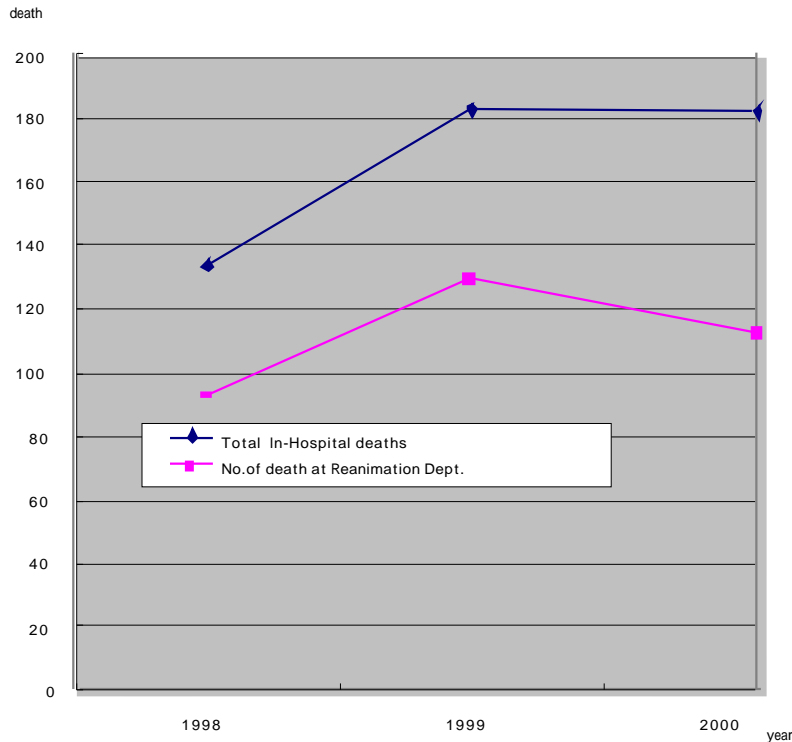


Figure-2: In-Hospital Deaths in Recent Years

(3) Output of the Assistance Project: The Kzylorda Regional Medical Center will have and utilize upgraded medical equipment.

In selecting the indicators to measure the outcome of the Project, we collected and analyzed the statistical figures of the Kzylorda Regional Medical Center that would immediately reflect the qualitative expansion of the capabilities of the hospital. Listed below are the indicators and how they are projected to change after the implementation of the Project.

<Projection of Project Output Indicators>

The average number of patients between 2003 and 2006 will increase from 20,194, the average figure between 1998 and 2000.

The average number of operations between 2003 and 2006 will increase from 6,067, the average figure between 1998 and 2000.

The average number of clinical tests between 2003 and 2006 will increase from 1,424,069, the average figure between 1998 and 2000.

The average number of pathological tests between 2003 and 2006 will increase from 21,847, the average figure between 1998 and 2000.

The Kzylorda Regional Medical Center is accepting a large number of patients referred from other medical facilities throughout the Kzylorda Region. If the Medical Center becomes better equipped through this Project, it will be able to provide comprehensive medical services as the top-referral hospital of the region. This will lead to an increased number of referred patients from lower-level facilities and other patients who will be visiting the Medical Center by choice. In addition, if the Medical Center adopts new equipment and methods to perform more precise and advanced tests and surgical procedures, it will enable the hospital to make more accurate diagnoses and conduct early treatment. The increase in the number of tests and operations will lead to the qualitative and quantitative expansion of the hospital's service capabilities. Therefore, the numbers of patients, operations, clinical and pathological tests will be appropriate to choose as indicators to measure the outcome of the Project. These indicators will be evaluated in 2003 one year after the completion and handover of the Project. Numerical targets will be set on the assumption that the average figures after the Project implementation between 2003 and 2005 will increase.

Table-22 : Medical Activities

	1998	1999	2000	98-00 Average
Total No. of patients	13,187	17,966	22,422	20,194
Total No. of operations	3,945	3,907	4,872	4,241
Total No. of clinical tests	1,061,204	1,405,440	1,805,564	1,424,069
Total No. of pathological tests	18,464	21516	25,563	21,847

Source: Kzylorda Regional Medical Center

3-2 Recommendation

(1) Remaining Tasks and Recommendations

Listed below are future tasks and recommendations for the Kazakhstan side to ensure that the Project will take effect and be sustained.

Securing of Medical Funds

While new financial and legal systems for the medical sector that are more suited for market economy are being developed, the Kazakh medical sector is still in the process of finding workable solutions after the collapse of the medical/health insurance system in 1998. Although a new medical/health insurance system is scheduled to be adopted in 2002, its details have yet to be officially announced. How to secure funds for the future health/medical programs is a question to be answered, and the Kazakh side is expected to establish a system under which sufficient funds will be appropriated for the health/medical sector.

Education of Medical Personnel

In the Republic of Kazakhstan, most of the medical equipment has not been renewed since the country's independence. With the superannuated equipment, hospitals cannot obtain test data necessary for the diagnosis or treatment based on the latest medical science. With an aim to elevate the technical and awareness levels of the medical staff, who have grown accustomed to traditional methods, the Kazakhstan side has been conducting training seminars. However, many people still show little concern about changing the administrative aspects of hospital operation, including the control of medical charts and the management of hospital facilities and equipment. For this project to take maximum effect, the medical staff's awareness in these aspects needs to be elevated, for which proper education will be desirable.

Development of Health/Medical System

Medical institutions in Kazakhstan still follow the old system of the former Soviet era, under which sharing of rooms and medical equipment is prohibited even among related departments, such as operation room and delivery room, and each clinical department tends to control its own equipment. Through this Project, the old system is expected to change and be replaced with a new one that is better suited for the current health reform program. In addition, it will be desirable if a new medical service system is established to enable each clinical department to function as part of a comprehensive system and share the expensive medical equipment not only with other departments but also with other medical institutions within the community.

(2) Technical Cooperation or Coordination with Other Donor Organizations

This Project will be adequately operated and maintained within the current resources of the Kzylorda Regional Medical Center. However, for the Project to take maximum effect, it is desirable to effectively assign the personnel who have been trained in Japan to this Project. WHO and other international aid organizations are providing technical assistance mostly for the primary health care sector. If such technical assistance is extended to Kzylorda Region, it will be improving the health of the region.

Appendices

1. Member List of the Study Team

(1) Basic Design Study

Mr. Tomikazu INAGAKI	Team Leader Senior Adviser Japan International Cooperation Agency
Dr. Akira OTSURU	Technical Adviser Nagasaki University
Mr. Kazuhiro ABE	Project Manager International Techno Center Co., Ltd.
Mr. Hiroshi TASEI	Equipment Planner International Techno Center Co., Ltd.
Mr. Masataka MITA	Facility Planner International Techno Center Co., Ltd.
Ms. Nahoko KITAMURA	Baseline Surveyor International Techno Center Co., Ltd.
Mr. Akio KANEKO	Cost and Procurement Planner International Techno Center Co., Ltd.
Mr. Yukichi GOTO	Interpreter International Techno Center Co., Ltd.

(2) Explanation of Draft Final Report

Mr. Toru YOSHIDA	Team Leader Grand Aid Division Economic Cooperation Bureau, Ministry of Foreign Affairs
Dr. Akira OTSURU	Technical Adviser Nagasaki University
Mr. Kazuhiro ABE	Project Manager International Techno Center Co., Ltd.
Mr. Hiroshi TASEI	Equipment Planner International Techno Center Co., Ltd.
Mr. Akio KANEKO	Cost and Procurement Planner International Techno Center Co., Ltd.
Mr. Yukichi GOTO	Interpreter International Techno Center Co., Ltd.

2. Study Schedule

(1) Basic Design Study

			Mr. Inagaki, Dr. Otsuru						
			Chief Consultant	Equipment Planner	Facility Planner	Procurement	Baseline survey	Interpreter	
			ABE Kazuhiro	TASEI Hiroshi	MITA Masataka	KANEKO Akio	KITAMURA Nahoko	GOTO Yukichi	
1	26-May	Sat.	(LH711 10:05) Frankfurt(14:50)			(LH711 10:05) Frankfurt(14:50)			
2	27-May	Sun	Dep. Frankfurt(LH648 14:15)			Dep. Frankfurt(LH648 14:15)			
3	28-May	Mon	Arv. Al-Maty(01:40) Courtesy call to Embassy of Japan			Arv. Al-Maty(01:40) Coutesy call to Embassy of Japan			
4	29-May	Tue	Al-Maty(07:05) Astana(08:35)	Al-Maty(10:00) Kzylorda(11:50) Survey preparation		Al-Maty(10:00) Kzylorda(11:50)		Same as chief consultant	
5	30-May	Wed	Al-Maty(10:00) Kzylorda(11:50) Survey in Kzylorda			Survey in Kzylorda		Same as chief consultant	
6	31-May	Thu	Survey in Kzylorda			Japan(LH711 10:05) Frankfurt(14:50)	Survey in Kzylorda		
7	1-Jun	Fri	Survey in Kzylorda			Frankfurt(LH648 11:15) Al-Maty (22:40)	Survey in Kzylorda		
8	2-Jun	Sat	Survey in Kzylorda			Al-Maty(10:00) Kzylorda(11:50)	Survey in Kzylorda		
9	3-Jun	Sun	Survey in Kzylorda						
10	4-Jun	Mon	Survey in Kzylorda						
11	5-Jun	Tue	Survey in Kzylorda						
12	6-Jun	Wed	Survey in Kzylorda						
13	7-Jun	Thu	Survey in Kzylorda						
14	8-Jun	Fri	Survey in Kzylorda						
15	9-Jun	Sat	Survey in Kzylorda						
16	10-Jun	Sun	Survey in Kzylorda						
17	11-Jun	Mon	Survey in Kzylorda						
18	12-Jun	Tue	Japan Frankfurt			Survey in Kzylorda			
19	13-Jun	Wed	Frankfurt			Survey in Kzylorda			
20	14-Jun	Thu	Al-Maty(01:40)			Survey in Kzylorda			
21	15-Jun	Fri	Al-Maty(10:00)	Kzylorda(11:50)		Survey in Kzylorda			
22	16-Jun	Sat	Internal meeting			Survey in Kzylorda		Same as chief consultant	
23	17-Jun	Sun	Internal meeting			Kylorda(14:30) Al-Maty(17:50)		Same as chief consultant	
24	18-Jun	Mon	Discussion for Minutes of Discussion with Regional Health Office an Kzylorda Regional Medical Center.			Al-Maty(LH647 04:15) Frankfurt(06:05) 、 (LH710 13:55)	Survey in Al-Maty	Al-Maty(LH647 04:15) Frankfurt(06:05) 、 (LH710 13:55)	Same as chief consultant
25	19-Jun	Tue	Discussion for Minutes of Discussion with Regional Health Office and Kzylorda Regional Medical Center.			Arv. Japan		Arv. Japan	Same as chief consultant
26	20-Jun	Wed	Kzylorda(14:30) Al-Maty(17:50) Al-Maty(19:00) Astana(20:30)			Survey in Al-Maty		Same as chief consultant	
27	21-Jun	Thu	Discussion for Minutes of Discussion with Agencies and Ministries Signature for Minutes of Discussion			Survey in Al-Maty		Same as chief consultant	
28	22-Jun	Fri	Astana(09:30) Al-Maty(11:00) Report to Embassy of Japan			Survey in Al-Maty		Same as chief consultant	
29	23-Jun	Sat	Al-Maty(LH647 04:15) Frankfurt(06:05) 、 (LH710 13:55)			Al-Maty(LH647 04:15) Frankfurt(06:05) 、 (LH710 13:55)		Same as chief consultant	
30	24-Jun	Sun	Arv. Japan			Arv. Japan		Same as chief consultant	

(2) Explanation of Draft Final Report

			Mr. Yoshida, Dr. Otsuru	Chief Consultant	Equipment Planner	Procurement	Interpreter
				ABE Kazuhiro	TASEI Hiroshi	KANEKO Akio	GOTO Yukichi
1	23-Sep	Sun		(LH711 10:05) Frankfurt (14:50)			
2	24-Sep	Mon		Dep. Frankfurt (LH648 11:15) Arv. Al-Maty(22:40)			
3	25-Sep	Tue		Courtesy call to Embassy of Japan	Survey of other donor and institution		Same as chief consultant
4	26-Sep	Wed		Al-Maty(07:05) Astana(08:35) Courtesy call to Agencies and Ministries	Al-Maty(10:00) Kzylorda(11:50) Survey preparation		Same as chief consultant
5	27-Sep	Thu		Courtesy call to Ministries Astana(22:00) Al-Maty(23:30)	Survey in Kzylorda		Same as chief consultant
6	28-Sep	Fri		Al-Maty(10:00) Kzylorda(11:50) Courtesy call to Hosp.	Survey in Kzylorda		Same as chief consultant
7	29-Sep	Sat		Survey in Kzylorda			
8	30-Sep	Sun		Internal meeting			
9	1-Oct	Mon		Survey in Kzylorda			
10	2-Oct	Tue		Survey in Kzylorda			
11	3-Oct	Wed		Survey in Kzylorda			
12	4-Oct	Thu		Survey in Kzylorda			
13	5-Oct	Fri		Survey in Kzylorda			
14	6-Oct	Sat		Japan Frankfurt	Survey in Kzylorda		
15	7-Oct	Sun	Frankfurt	Internal meeting			
16	8-Oct	Mon	Al-Maty(10:00) Kzylorda(11:50) Discussion for Minitues	Survey in Kzylorda			
17	9-Oct	Tue	Survey in Kzylorda, Discussion for Minutes with Regional Health Office and Survey in Kzylorda Regional Medical Center		Kzylorda(11:55) Al-Maty(15:30)	Same as chief consultant	
18	10-Oct	Wed	Discussion for Minutes and Minutes sign		Survey of other institution	Same as chief consultant	
19	11-Oct	Thu	Kzylorda(11:55) Al-Maty(15:30)	Al-Maty(19:00) Astana(20:30)	Al-Maty(LH647 04:15) Frankfurt(06:05) 、 (LH710 13:55)	Same as chief consultant	
20	12-Oct	Fri	Discussion for Minutes and Minutes sign Report to Embassy of Japan	Astana(15:45) Al-Maty(17:15)	Arv. Japan	Same as chief consultant	
21	13-Oct	Sat	Al-Maty(LH647 04:15) Frankfurt(06:05) 、 (LH710 13:55)	Internal meeting		Same as chief consultant	
22	14-Oct	Sun	Arv. Japan	Internal meeting		Same as chief consultant	
23	15-Oct	Mon	Survey of Aksay Hosp.			Same as chief consultant	
24	16-Oct	Tue	Al-Maty(LH647 04:15) Frankfurt(06:05) 、 (LH710 13:55)			Same as chief consultant	
25	17-Oct	Wed	Arv. Japan			Same as chief consultant	

3. List of Parties Concerned in the Recipient Country

Ministry of Health	AYDARKHANOV	Arman	First Deputy Chairman
	MUSSINOV	Serikbol	Director, Department for Organizations and Monitoring of Public Services Medical
	MASKHUTOV	Ruslan	Chief specialist of International
Ministry of Economy Trade	BAISHEV	Berik	Director, Investment Policy Dpt..
	YERLAN	Arinov	Deputy Director
	YERZHANOVA	Leila	Senior Expert
	HASHIMOTO	Fuminari	JICA ODA Adviser
Ministry of Foreign Affairs	ONZHANOV	Nurlan	Director, Economic Policy Dpt.
Ministry of State Revenues	BAITISHKANOVA	Sayle	Staff
Embassy of Japan, Kazakhstan	HOSAKA	Masayuki	First Secretary
Children's Hospital <Aksay>	AYAZBEKOV	Yermek	Director

Project site

Regional Health Administration		DAULETBAEV	Damir	Director
		ALNAZAROVA	Akmaral	Deputy Director
Kyzylorda Regional Medical Center		TURGANBAY	Makhanov	Director
		MAILYBAYER	Sapar	Deputy Director
		MYRZAHMETOV	Kairat	Vice Director
		SERIKOVA	Gulnuraim	Vice Director
		TAPSYNBAYEV Yermagambet		Vice Director
		SHULENBAYEV	Abdulla	Head of Surgery Dpt.
		ELUSUZOV	Begaly	Head of Stomatology Dpt.
		VALISHAYEV	Isahmet	Head of Urology Dpt.
		NURUMBETOV	Shadiyar	Head of Reanimation Dpt.
		ALDAMZHANOV	Amantai	Head of Ortho.&Trauma. Dpt.
		ISAMBERLIN	Aslan	Head of ENT Dpt.
		ESBOSSYNOVA	Begaim	Head of Ophthalmology Dpt.
		PAK	Yakov	Head of X-ray Dpt.
		ISKENDIROV	Shakirat	Chief of Endoscopy
		ISKENDIROVA	Guliyain	Chief of Laboratory
Kyzylorda Municipal Maternity Hosp.		PAN	Leontiy	Medical equipment Consultant
		ZAAPPOROV	Tynyshtik	Chief, Consultation engineer
		KALIMBETOVA	Bibazhar	Director

4. Minutes of Discussions

(1) Basic Design Study

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR EXTENDING MEDICAL EQUIPMENT
TO MULTI-FIELD HOSPITAL COMPLEX OF KZYLORDA

Based on the results of the Preparatory Study, the Government of Japan decided to conduct a Basic Design Study on the Project for Extending Medical Equipment to Multi-Field Hospital Complex of Kzylorda (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 Republic of Kazakhstan (hereinafter referred to as "the Kazakhstan") the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Tomikazu Inagaki, Senior Adviser, Japan International Cooperation Agency (JICA), and is scheduled to stay in the country from May 28 to June 23, 2001.

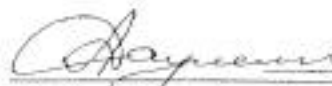
The Team held discussions with the officials concerned of the Government of Kazakhstan and conducted a field survey at the study area.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Kzylorda, June 20, 2001



Mr. Tomikazu Inagaki
Leader
Basic Design Study Team
Japan International Cooperation Agency



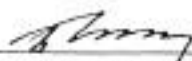
Dr. Dauletbaev Damir
Head
The Department of Health
Kzylorda Oblast



Dr. Makhanov Turganbay
Director
Kzylorda Regional Medical Center
Kzylorda Oblast



Prof. Doskaliev Zhaxylyck
Chairman
The Agency of Health Affairs
The Republic of Kazakhstan



Mr. Baishev Berik
Head of Investment Policy Department
Ministry of Economy and Trade
The Republic of Kazakhstan

1. Objective of the Project

The objective of the Project is to improve and strengthen the medical services in Multi-Field Hospital Complex of Kzylorda through the procurement of medical equipment .

2. Project sites

The site of the Project is Multi-Field Hospital Complex of Kzylorda.

3. Responsible and Implementing Agency

3-1. Responsible Agency

The Agency of Health Affairs of the Republic of Kazakhstan

3-2. Implementing Agency

The Department of Health, Kzylorda Oblast
Multi-Field Hospital Complex of Kzylorda

4. Items requested by the Government of Kazakhstan

After discussions with the Team, the items described in Attachment-2 were finally requested by the Kazakhstani side. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Japan's Grant Aid Scheme

5-1. The Kazakhstani side understands the Japan's Grant Aid Scheme explained by the Team, as described in Attachment-3.

5-2. The Kazakhstani side will take the necessary measures, as described in Attachment-4, for smooth implementation of the Project, as a condition for the Japan's Grant Aid to be implemented.

6. Schedule of the Study

6-1. JICA will prepare the draft report in English (and the summary report in Russian) and dispatch a mission in order to explain its contents in September 2001.

6-2 In case that the contents of the report is accepted in principle by the Government of Kazakhstan, JICA will complete the final report and send it to the Government of Kazakhstan around February, 2002.

7. Other relevant issues

7-1. The Kazakhstani side will take necessary measures for regulation of medical equipment registration regarding registration cost and procedure to smoothly implement the Project.

7-2. The Kazakhstani side will allocate the necessary budget and personnel for the Project for securing sustainable and proper operation and maintenance of the equipment included in the Project.

7-3. The Kazakhstani side declared not to request the similar item list to other donors in order to avoid duplication of the equipment.

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Item No	Department/Equipment	Qty	Priority
A.	Haemodialysis Department		
A-1	Haemodialysis Unit	5	A
B.	Operation Department		
B-01	Electrosurgical Unit	9	A
B-02	Dermatome	1	A
B-03	Operating Light, Mobile	9	A
B-04	Surgical Scrub Station	6	A
B-05	Patient Monitor	9	A
B-06	Defibrillator	5	A
B-07	Anaesthetic Unit	8	A
B-08	Anaesthetic Unit, Infant	1	A
B-09	Universal Operation Table, hydraulic	9	A
B-10	Suction Unit	9	A
B-11	X-ray Unit, Surgical	1	A
B-12	Instruments Set	1	A
B-13	Bone Saw	1	A
B-14	Bone Hand Drill	1	A
B-15	Operation Microscope for ENT	1	A
B-16	Laryngoscope	9	A
B-17	Cystoscope for adult and child	1	A
B-18	Cysto-urethroscope	1	A
B-19	Resectoscope	1	A
B-20	Autoclave	1	A
B-21	Emergency Set	1	A
B-22	Head light	9	A
B-23	Instruments table	18	A
B-24	Instruments Drum Set	1	A
B-25	Mayo Table	9	A
B-26	Mobile UV lamp	9	A
B-27	Perforator	2	A
B-28	Surgical Incubator	1	A
B-29	Laparoscope, Nerosugery	1	A
C.	Dental Department		
C-01	Dental Unit	2	B
C-02	X-ray Film Processor	1	B
C-03	Dental Treatment Instrument Set	3	B
C-04	Dental Laboratory Micromotor	2	B
C-05	Hot Air Sterilizer	1	B
C-06	Ultrasonic Scaler	1	B
C-07	Hydraulic Flask Press	1	B
C-08	Dental Treatment Cabinet	2	B
C-09	Light Polymeriser	1	B
C-10	Furnace	1	B
C-11	Instruments Set (extraction)	3	B
C-12	Instruments Set (dental surgery)	2	A
C-13	Laser Unit	1	B
C-14	Dental Coagulation Unit	1	B
C-15	Occludator	1	B
C-16	Automatic Casting Unit	1	B
C-17	Torch	1	B
C-18	Sand Blaster	1	B



Item No	Department/Equipment	Qty	Priority
D.	X-Ray Diagnostic Department		
D-01	X-ray Unit	1	B
D-02	X-ray Unit, Fluoroscopy	1	A
D-03	X-ray Unit, Urology	1	A
D-04	X-ray Unit, Mobile	2	A
D-05	X-ray Unit, Mammography	1	B
D-06	X-ray unit, Panoramic	1	A
D-07	X-ray Film Processor	2	A
D-08	X-ray Film Illuminator	4	B
D-09	X-ray Accessories	5	B

E.	Pediatric Department	Qty	Priority
E-01	EEG	1	A
E-02	EMG	1	A
E-03	Syringe Pump	1	A
E-04	Defibrillator	1	A
E-05	ECG	1	A
E-06	Suction Unit, Portable	4	A
E-07	Weighing Scale	5	A
E-08	Diagnostic Set	5	A
E-09	Pulseoxymeter	1	A
E-10	Laryngoscope Set Miller's	4	A
E-11	Minor Surgery Set	5	A
E-12	Hot Air Sterilizer	2	A
E-13	Oxygen Inhalation Set	3	A
E-14	Sphygmomanometer	5	B
E-15	Stethoscope	5	B
E-16	Ultrasonic Nebulizer	2	A

F.	Perinatal Center	Qty	Priority
F-01	Patient Monitor	3	A
F-02	Ultrasound Apparatus, portable	1	A
F-03	Fetal Monitor	1	A
F-04	ECG	1	A
F-05	Phototherapy Unit	3	A
F-06	Transportation Incubator	1	A
F-07	Neonatal Monitor	2	A
F-08	Weighing Scale, Infant	6	A
F-09	Infant Warmer	5	A
F-10	Ultrasonic Nebulizer	1	A
F-11	Oxygen Tent	1	A
F-12	Infant Incubator	6	A
F-13	Pulseoxymeter	2	A
F-14	Examination unit Gynaecology	1	A
F-15	Delivery and Operating Table	2	A
F-16	Obstetric and Gynecology Instruments Set	5	A
F-17	Resuscitator	2	A
F-18	Bilirubinmeter	2	A
F-19	Hot Air Sterilizer	1	A
F-20	Oxygen Inhalation Set	3	A
F-21	Fetal Doppler	1	A
F-22	Colposcope	1	A

G.	Reanimation and ICU	Qty	Priority
G-01	ICU Bed	22	B

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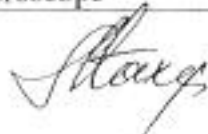

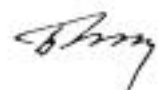
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Item No.	Department/Equipment		
G-02	Transcutaneous Monitor	3	B
G-03	Patient Monitoring System	2	A
G-04	Ventilator	11	A
G-05	Defibrillator	3	A
G-06	Blood Gas Analyser	1	A
G-07	Suction Unit, Portable	6	A
G-08	Oxygen Inhalation Unit, Wall Mount Type	3	B
G-09	Low Pressure Continuous Suction Unit	3	A
G-10	Ultrasonic Nebulizer	11	A
G-11	Infusion Pump	22	B
G-12	Blood Warmer	3	B
G-13	Ventilator, Infant	1	A
G-14	Infant Incubator	1	A
G-15	Weighing Scale, Infant	1	A
G-16	Lift Scale	1	B
G-18	Laryngoscope	5	B
G-19	Blood Refrigerator	1	B

H.	Endoscopy Department	Qty	Priority
H-01	Gastrointestinalfiberscope	1	A
H-02	Gastrointestinalfiberscope, child	1	A
H-03	Duodenofiberscope	1	A
H-04	Colonofiberscope	1	A
H-05	Bronchofiberscope	2	A
H-06	Bronchofiberscope, child	1	A
H-07	Endoscopic Trolley	2	A
H-08	Endoscope Cabinet	2	A
H-09	Electrosurgical Unit for Endoscopy	3	A
H-10	Disinfection Trolley	10	A
H-11	Endoscopy Table	4	A
H-12	Endoscopy TV system	1	A

I.	Functional Examination Department	Qty	Priority
I-01	ECG	2	A
I-02	Spirometer	1	A
I-03	EEG	1	A
I-04	Ultrasound Apparatus, Color Doppler	1	A
I-05	Ultrasound Apparatus	3	A
I-06	Pulseoxymeter	5	A
I-07	Audiometer	2	A
I-08	Blood Pressure Monitor	15	A

J.	Laboratory	Qty	Priority
J-01	pH-meter	1	A
J-02	Bloodcell Counter	1	A
J-03	Biochemical Analyser	1	A
J-04	Blood Gas Analyser	1	B
J-05	Centrifuge	2	A
J-06	Micropipette Set	2	A
J-07	Laboratory Instrument Set	1	B
J-08	Balance	2	A
J-09	Urine Analyser	1	B
J-10	Hematecrite Centrifuge	3	A
J-11	Hot Air Sterilizer	2	A
J-12	Binocular Microscope	2	A

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Item No	Department/Equipment		
J-13	Tip Washer	1	A
J-14	Leucocyte Counter	10	A
J-15	Coagulometer	1	B
J-16	Spectrophotometer	1	B
J-17	Magnetic Stirrer	1	A
J-18	Refrigerator	3	A

K.	Administration Department (Education)	Qty	Priority
K-01	TV monitor	1	B
K-02	Lecturescope	1	B
K-03	Video Projector	1	B

L.	ENT Department	Qty	Priority
L-01	Ultrasound Apparatus, ENT	1	B
L-02	ENT Instrument Set	2	A
L-03	Rhino-Laryngo Fiberscope	1	A
L-04	ENT Treatment Unit	2	A
L-05	Suction Unit	1	A
L-06	Ultrasonic Nebulizer	1	A

M.	Urology Department	Qty	Priority
M-01	Examination Table, Urology	1	B
M-02	Lithotripter	1	A

N.	Traumatology/Orthopedics Department	Qty	Priority
N-01	Orthopedic Table	1	A
N-02	Mechanical Therapy Apparatus	2	A
N-03	Arthroscopy Set	1	A

O.	Ophthalmology Department	Qty	Priority
O-01	Refractometer	2	B
O-02	Projection Perimeter	1	B
O-03	Indirect Ophthalmoscope	2	B
O-04	Ultrasound Apparatus, Ophthalmology	1	A
O-05	Tonometer	1	A
O-06	Trial Lens Set	3	B
O-07	Instrument Set (Ophthalmic Surgery)	2	A
O-08	ND-YAG Laser	1	A
O-09	Slit Lamp	1	A

P.	Rehabilitation Department	Qty	Priority
P-01	Hydro Bath	5	B
P-02	Extraction Unit	1	B
P-03	Treadmill	2	B

R.	Garage	Qty	Priority
R-01	Ambulance (Jeep Type)	2	A
R-02	Ambulance (Minibus Type)	2	A

S.	Pharmacy Department	Qty	Priority
S-01	Water Distiller	1	A
S-02	Hot Air Sterilizer	1	A
S-03	Autoclave, Vertical	1	A
S-04	Balance	1	A






Item No.	Department/Equipment	Qty	Priority
T.	Pathology Department		
T-01	Microtome	3	A
T-02	Binocular Microscope	2	A
T-03	Fluorescence Microscope	1	A
T-04	Autopsy Instrument Set	2	A

The following items should be studied in Japan.

	Equipment	Qty
1)	X-ray Angiograph System	1
2)	Bed for Burn Treatment	1
3)	Isolation Tent	1
4)	Fluorescence Spectrophotometer	1
5)	Atomic Absorption spectrophotometer	1
6)	Gas Chromatograph	1
7)	Liquid Chromatograph	1

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Japan's Grant Aid

1 Grant Aid Procedures

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 & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Government 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 (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm (s).

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 Government 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) Content of the Study

The aim of the Basic design Study (hereafter referred to as "the Study"), conducted by JICA on a requested project (hereafter 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:

- Confirmation of the background, objectives, and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid

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Scheme from a technical, social and economic point 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.
- 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 though 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 organization of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For the smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA select (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry (ies) out a Basic Design Study and write(s) a report based upon terms of reference set by JICA. The consulting firm(s) used for the Study which is (are) recommended by JICA to the recipient country also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

3 Japan's Grant Aid Scheme

1) What is Grant Aid?

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 supplies through the donation of materials as such.

2) 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 the execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Noes, concluding contracts with (a) consultant firms(s) and (a) contractor(s) 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.

- 4) under the Grant Aid, 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 the third country.

However, the prime contractors, namely, consulting constructing 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.)

5) Necessity of "Verification"

The Government of recipient country of 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 to Japanese taxpayers.

6) Undertakings required of the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such as necessary measures as the following:

- (1) To secure the completion of building rehabilitation work prior to the procurement of the equipment.
- (2) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites.
- (3) To secure buildings prior to the procurement in case the installation of the equipment.
- (4) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.
- (5) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified contracts.
- (6) 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

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their work.

(7) "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 staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(8) "Re-export"

The products purchased under the Grant aid should not be re-exported from the recipient country.

(9) Banking Arrangements (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 exchanged 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 authorization to pay issued by the Government of the recipient country or its designated authority.

John E. Day *Shary* *Lucif* *Shing*

Major Undertakings to be taken by Each Government

No.	Items	To be covered by the Grant Aid	To be covered by the 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 the recipient country		
	1) Marine(Air) transportation of the products from Japan or third countries to the recipient country	●	
	2) Tax exemption 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 equipment provided under the Grant Aid		●
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for execution of the Project including operation and maintenance costs of the equipment		●

(B/A: Banking Arrangement, A/P: Authorization to Pay)

(2) Explanation of Draft Final Report

MINUTES OF DISCUSSIONS
ON BASIC DESIGN STUDY ON EXTENDING MEDICAL EQUIPMENT TO MULTI-FIELD
HOSPITAL COMPLEX OF KZYLORDAIN THE REPUBLIC OF KAZAKHSTAN
(EXPLANATION ON DRAFT FINAL REPORT)

In September 2001, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Draft Report Explanation Team on Extending Medical Equipment to Multi-field Hospital Complex of Kzylorda (hereinafter referred to as "the Project") to the Republic of Kazakhstan (hereinafter referred to as "Kazakhstan"), and through discussion, field survey, and technical examination of the study results in Japan, JICA prepared a draft final report of the study.

In order to explain and to consult the Kazakhstan on the components of the draft final report, JICA sent to Kazakhstan the Draft Final Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Toru Yoshida, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs from September 24, 2001 to October 16, 2001.

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

Kzylorda, October 12, 2001



Mr. Toru Yoshida
Leader
Draft Report Explanation Team
Japan International Cooperation Agency



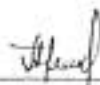
Dr. Dautbaev Damir
Head
The Department of Health
Kzylorda Oblast



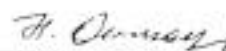
Dr. Makhanov Turganbay
Director
Kzylorda Regional Medical Center
Kzylorda Oblast



Dr. Arman T. Aydarkhanov
Deputy Chairman
The Agency of Health Affairs
The Republic of Kazakhstan



Mr. Yerlan Arinov
Director, Investment Policy Department
Ministry of Economy and Trade
The Republic of Kazakhstan



Mr. Nurlan Onzhanov
Director, Economic Policy Department
Ministry of Foreign Affairs
The Republic of Kazakhstan

ATTACHMENT

1. Components of the Draft Report

The Government of Kazakhstan agreed and accepted in principle the components of the draft report explained by the Team. The list of equipment is attached to Annex-1.

2. Japan's Grant Aid scheme

The Kazakhstan side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Kazakhstan as explained by the Team, described in Attachment-3 of the Minutes of Discussions signed by both parties on July 20, 2001.

3. Schedule of the Study

- 3-1 The consultant members will proceed to conduct further study in Kazakhstan until October 15, 2001.
- 3-2 JICA will complete the final report in accordance with the confirmed item and send it to the Government of Kazakhstan by February 2002.

4. Other relevant issues

- 4-1 The Kazakhstan side has agreed to secure and allocate the enough budgets to operate and maintain the medical equipment provided by the Grant Aid properly and effectively.
- 4-2 The Kazakhstan side will ensure the quality of water for the proper use of medical equipment provided by the Grant Aid.
- 4-3 The Kazakhstan side explained about the current tax exemption principles as follows:
 - 1) The Exchange of Note is to be ratified by the Parliament for tax exemption of income tax and corporate tax.
 - 2) Value added tax (VAT) and customs duties on the equipment procured under the Grant Aid are exempted.
- 4-4 The Kazakhstan side will take necessary measures in order to ensure the tax exemption including VAT according to the procurement schedule described in Annex-2.

Annex-1: List of equipment

Annex-2: Procurement schedule



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Annex-1 List of equipment

Department	Item No.	Equipment	Qty
A. Hemodialysis Dept.	A-01	Hemodialysis Unit	3
B. Surgery Dept.	B-01	Electrosurgical Unit	6
	B-02	Dermatome	1
	B-03	Operating Light	6
	B-04	Patient Monitor	6
	B-05	Defibrillator	3
	B-06	Anaesthetic Unit (A)	5
	B-07	Anaesthetic Unit (B)	1
	B-08	Universal Operation Table	6
	B-09	Suction Unit (A)	6
	B-10	X-ray Unit, Surgical	1
	B-11	Instruments Set	1
	B-12	Bone Drill Set	1
	B-13	Operation Microscope for ENT	1
	B-14	Laryngoscope	6
	B-15	Cysto-urethroscope set	1
	B-16	Cysto-urethroscope set, child	1
	B-17	Autoclave	1
	B-18	Mobile UV lamp	6
	B-19	Infant Incubator	1
	B-20	Laparoscope, Neurosurgery	1
C. Dental Dept	C-01	Dental Unit	1
	C-02	Autoclave	1
	C-03	Instruments Set (extraction)	1
	C-04	Instruments Set (dental surgery)	1
D. X-Ray Diagnostic Dept.	D-01	X-ray Unit	1
	D-02	X-ray Unit, Fluoroscopy	1
	D-03	X-ray Unit, Mobile	2
	D-04	X-ray Unit, Mammography	1
	D-05	X-ray unit, Panoramic	1
	D-06	X-ray Film Processor	2
	D-07	X-ray Film Illuminator	2
	D-08	X-ray Accessories	1
E. Pediatric Dept	E-01	EEG	1
	E-02	Ultrasound Apparatus, portable	1
	E-03	Syringe Pump	1
	E-04	Defibrillator	1
	E-05	ECG	1
	E-06	Suction Unit (B)	5
	E-07	Weighing Scale, Infant	5
	E-08	Diagnostic Set	5
	E-09	Pulseoxymeter	1
	E-10	Laryngoscope Set	5
	E-11	Hot Air Sterilizer	2
	E-12	Oxygen Inhalation Set	3
	E-13	Ultrasonic Nebulizer	2
F. Perinatal Center	F-01	Patient Monitor	2
	F-02	Fetal Monitor	1
	F-03	ECG	1
	F-04	Phototherapy Unit	3
	F-05	Transportation Incubator	1
	F-06	Neonatal Monitor	2
	F-07	Weighing Scale, Infant	2
	F-08	Infant Warmer	3
	F-09	Ultrasonic Nebulizer	1
	F-10	Oxygen Tent	1
	F-11	Infant Incubator	6

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Department	Item No.	Equipment	Qty
	F-12	Pulseoxymeter	2
	F-13	Examination unit Gynaecology	1
	F-14	Delivery and Operating Table	1
	F-15	Obstetric and Gynecology Instruments Set	2
	F-16	Resuscitator	2
	F-17	Bilirubinmeter	1
	F-18	Hot Air Sterilizer	1
	F-19	Oxygen Inhalation Set (A)	2
	F-20	Fetal Doppler	1
	F-21	Colposcope	1
G. Resuscitation Dept.	G-01	ICU Bed	11
	G-02	Transcutaneous Monitor	1
	G-03	Patient Monitoring System	1
	G-04	Ventilator	4
	G-05	Defibrillator	1
	G-06	Blood Gas Analyser	1
	G-07	Suction Unit (A)	3
	G-08	Oxygen Inhalation Unit (B)	11
	G-09	Low Pressure Continuous Suction Unit	1
	G-10	Ultrasonic Nebulizer	4
	G-11	Syringe Pump	11
	G-12	Blood Warmer	1
	G-13	Ventilator, Infant	1
	G-14	Infant Incubator	1
	G-15	Weighing Scale, Infant	1
	G-16	Lift Scale	1
	G-17	Laryngoscope	1
	G-18	Blood Refrigerator	2
	G-19	Bed for burn treatment	1
	G-20	Pulseoxymeter	3
	G-21	Resuscitator	4
	G-22	Patient Monitor	3
H. Endoscopy Dept.	H-01	Gastrointestinalfiberscope	1
	H-02	Gastrointestinalfiberscope, child	1
	H-03	Duodenofiberscope	1
	H-04	Colonofiberscope	1
	H-05	Bronchofiberscope	1
	H-06	Bronchofiberscope, child	1
	H-07	Endoscope Cabinet	2
	H-08	Electrosurgical Unit for Endoscopy	1
	H-09	Endoscopy Table	4
	H-10	Endoscopy TV system	1
I. Functional Examination Dept.	I-01	ECG	1
	I-02	Spirometer	1
	I-03	EEG	1
	I-04	EMG	1
	I-05	Ultrasound Apparatus (A)	1
	I-06	Ultrasound Apparatus (B)	1
	I-07	Audiometer	1
J. Laboratory Dept.	J-01	pH-meter	1
	J-02	Bloodcell Counter	1
	J-03	Biochemical Analyser	1
	J-04	Blood Gas Analyser	1
	J-05	Centrifuge	2
	J-06	Micropipette Set	1
	J-07	Balance	2
	J-08	Hematrite Centrifuge	1
	J-09	Hot Air Sterilizer	2
	J-10	Binocular Microscope	5

to

Prof. Dr. Day Han, M.D.

Department	Item No	Equipment	Qty
	J-11	Leukocyte Counter	5
	J-12	Coagulometer	1
	J-13	Spectrophotometer	1
	J-14	Magnetic Stirrer	1
	J-15	Refrigerator	3
K. Administration Dept.	K-01	TV monitor	1
	K-02	Lecturescope	1
	K-03	Video Projector	1
L. Otorhinolaryngology Dept.	L-01	ENT Instruments Set	2
	L-02	Rhino-Laryngo Fiberscope	1
	L-03	ENT Treatment Unit	1
	L-04	Suction Unit (B)	1
	L-05	Ultrasonic Nebulizer	1
M. Urology Dept.	M-01	Examination Table, Urology	1
	M-02	Lithotripter	1
N. Orthopedics Dept.	N-01	Orthopedic Table	1
	N-02	Mechanical Therapy Apparatus	1
	N-03	Arthorscopy Set	1
O. Ophthalmology Dept.	O-01	Fundus Camera	1
	O-02	Projection Perimeter	1
	O-03	Ophthalmoscope	2
	O-04	Ultrasound Apparatus, Ophthalmology	1
	O-05	Tonometer	1
	O-06	Trial Lens Set	1
	O-07	Ophthalmic Instruments Set	2
	O-08	ND-YAG Laser	1
	O-09	Slit Lamp	1
P. Rehabilitation Dept.	P-01	Hydro Bath	2
	P-02	Extraction Unit	1
	P-03	Treadmill	1
R. Garages	R-01	Ambulance (Jeep Type)	2
S. Pharmacy Dept.	S-01	Water Distiller	1
	S-02	Hot Air Sterilizer	2
	S-03	Autoclave, Vertical	1
	S-04	Balance	1
T. Pathology Dept.	T-01	Microtome	2
	T-02	Binocular Microscope	2
	T-03	Autopsy Instrument Set	2

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Annex-2 Procurement schedule

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Flow and Works															
Cabinet decision	★														
Exchange of Notes (E/N)		★													
Ratification of E/N															
Consultant agreement & approved by MOFA															
Detail design study															
Preparation of Tender documents															
Tender Notice															
Tender and Tender evaluation															
Supplier agreement & approved by MOFA															
Manufacturing of equipment															
Pre-shipment inspection															
Transportation and custom inspection															
Unloading and installation															
Training and test operation															
Completion of the Project															

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5. References

	Title	Source	Year
1	A trend of National Sanitary and Health System (1991-2000)	The Agency of Health Affairs, The Republic of Kazakhstan	2001
2	Statistics data of Regional Medical Center, in 2000	Kzylorda Oblast	2001
3	Highlights on Health in Kazakhstan	WHO's European Region	1999
4	Kazakhstan: Public Expenditure Review	World Bank	2001

(2) Explanation of Draft Final Report

5. References

	Title	Source	Year
1	A trend of National Sanitary and Health System (1991-2000)	The Agency of Health Affairs, The Republic of Kazakhstan	2001
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