MINISTRY OF HEALTH

THE FORMER YUGOSLAV
REPUBLIC OF MACEDONIA

BASIC DESIGN STUDY REPORT
ON
THE PROJECT
FOR
UPGRADING THE MEDICAL EQUIPMENT
IN
THE FORMER YUGOSLAV
REPUBLIC OF MACEDONIA

NOVEMBER 1995

JAPAN INTERNATIONAL COOPERATION AGENCY
CRC OVERSEAS COOPERATION Inc.

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PREFACE

In response to a request from the Government of The Former Yugoslav Republic of Macedonia, the Government of Japan decided to conduct a basic design study on the Project for Upgrading the Medical Equipment and entrusted the study to the Japan International Cooperation Agency (JICA).

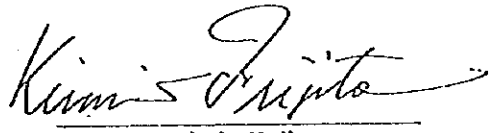
JICA sent to Macedonia a study team from July 9 to August 4, 1995.

The team held discussions with the officials concerned of the Government of Macedonia, 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 Macedonia 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 Former Yugoslav Republic of Macedonia for their close cooperation extended to the teams.

November, 1995



Kimio Fujita
President
Japan International Cooperation Agency

November, 1995

Letter of Transmittal

We are pleased to submit to you the basic design study report on The Project for Upgrading the Medical Equipment in The former Yugoslav Republic of Macedonia.

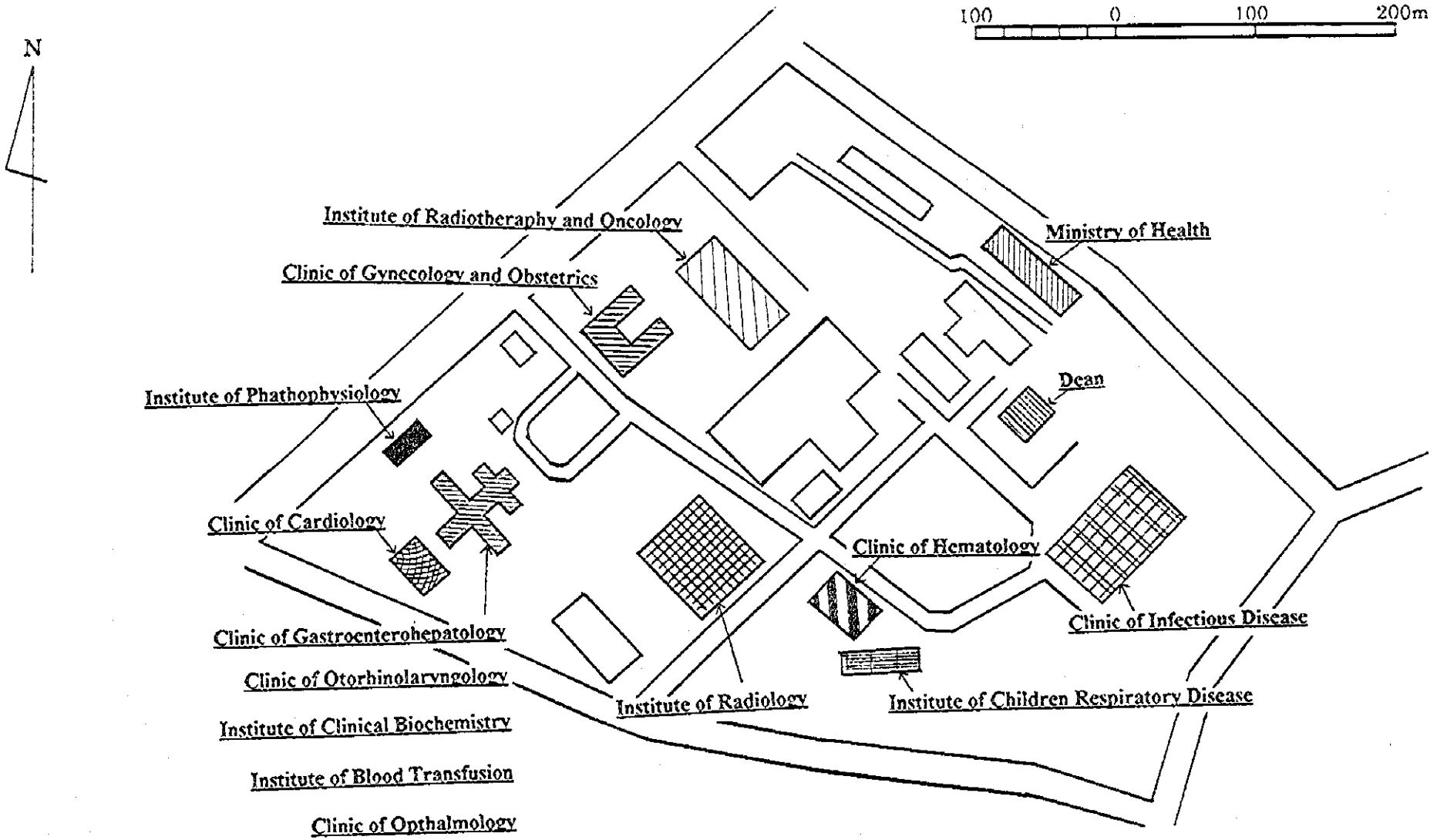
This study was conducted by CRC Overseas Cooperation Inc., under a contract to JICA, during the period from July 3 to November 27, 1995. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Macedonia and formulated the 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.

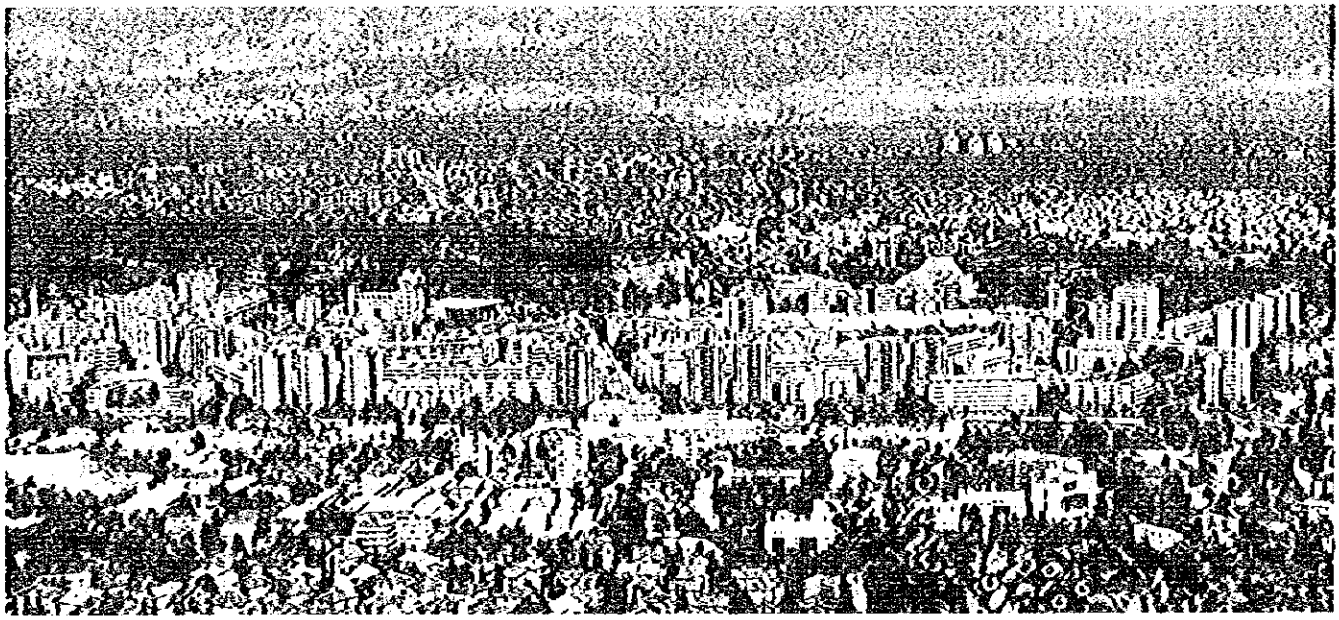
Very truly yours,

Keiji IIMURA

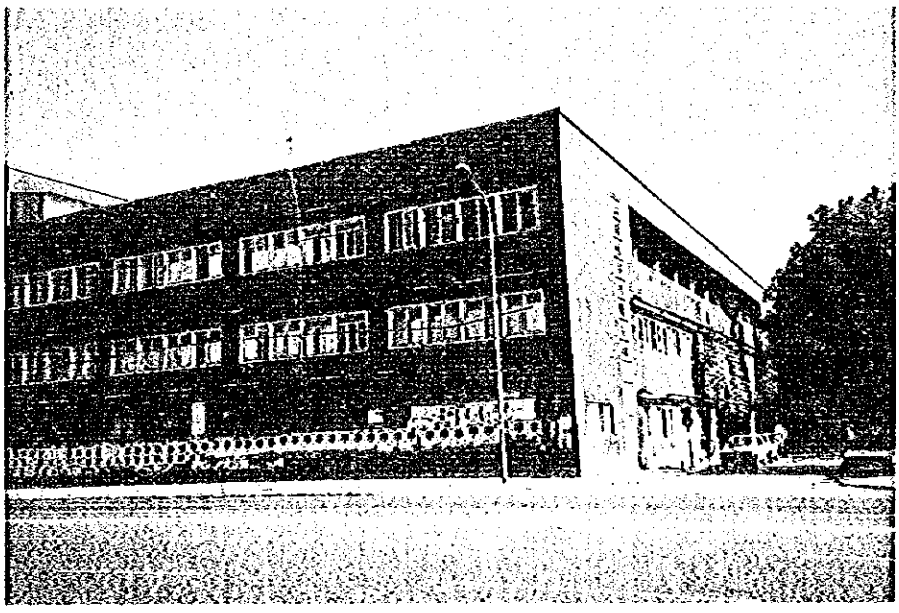
Project manager,
Basic design study team on
the project for upgrading
the medical equipment
CRC Overseas Cooperation Inc.



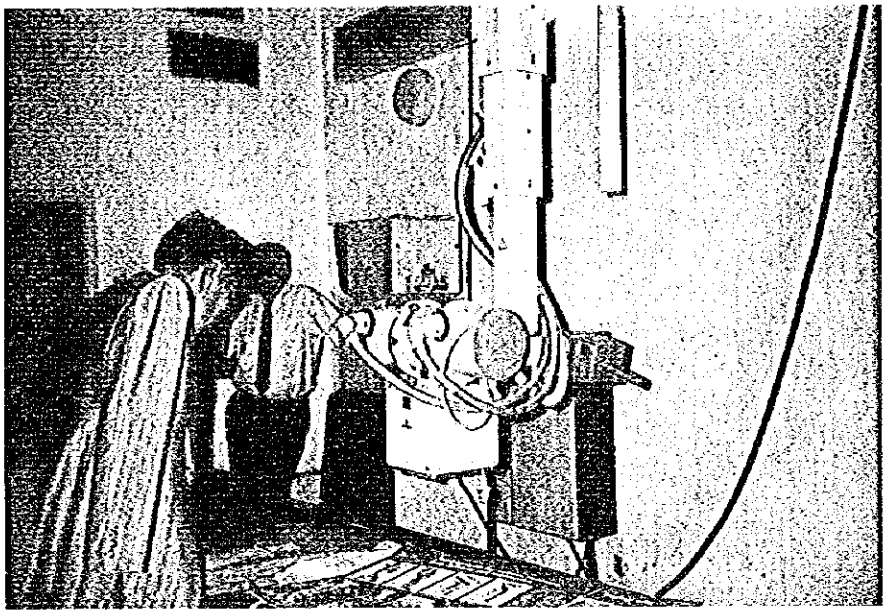
Map of The Medical Faculty of The Skopje University



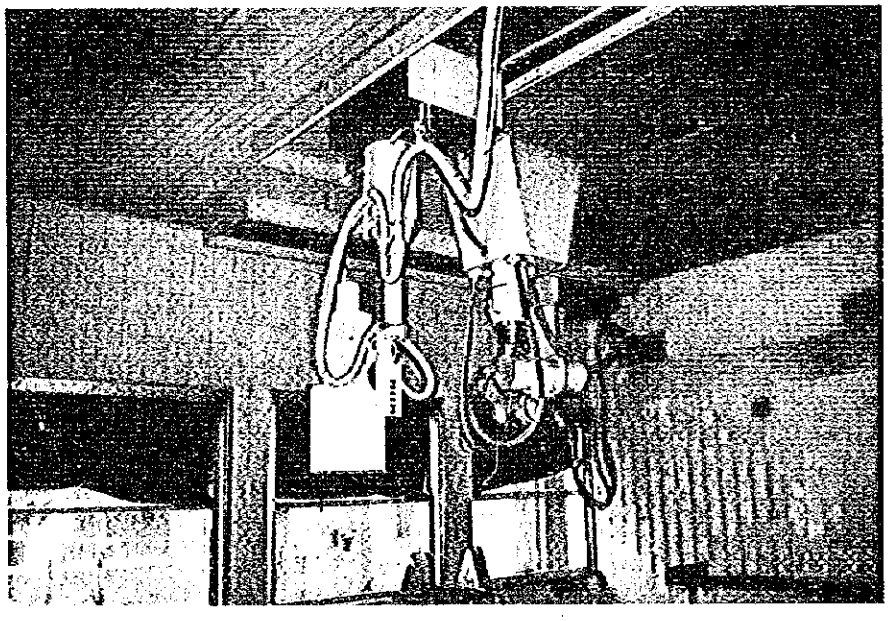
Overview of Skopje
(Center: Medical Faculty of Skopje University)



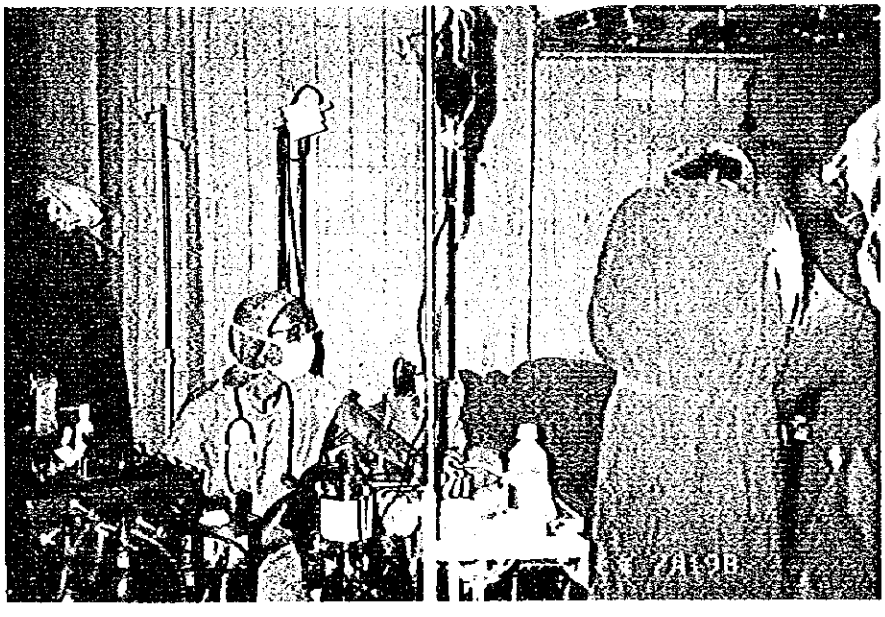
Skopje Surgical Hospital



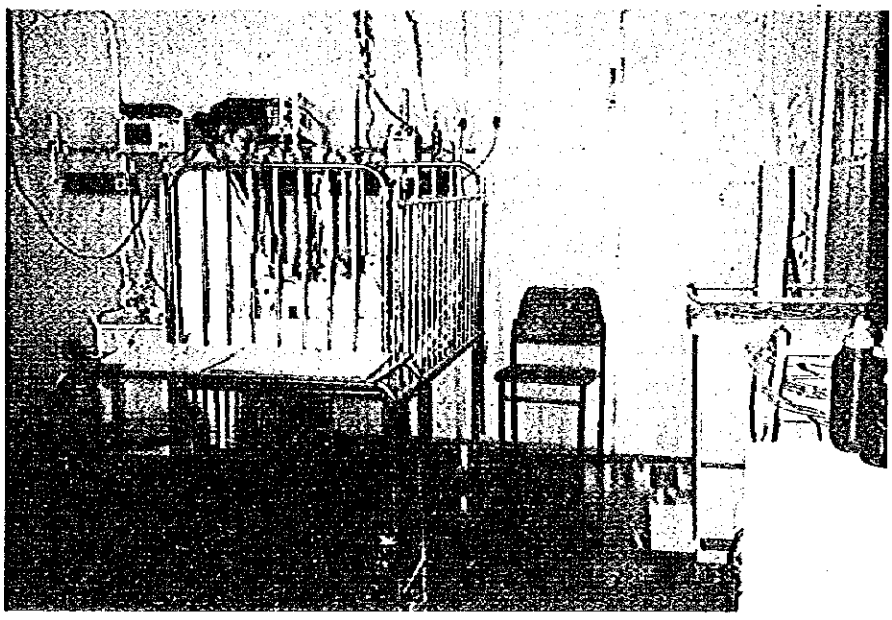
Obsolete Angiography System



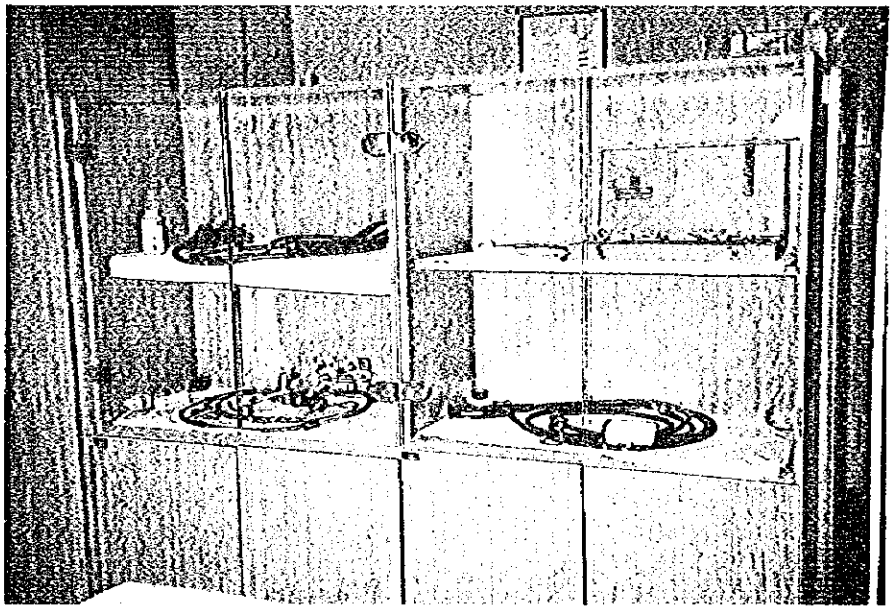
Obsolete X-ray System



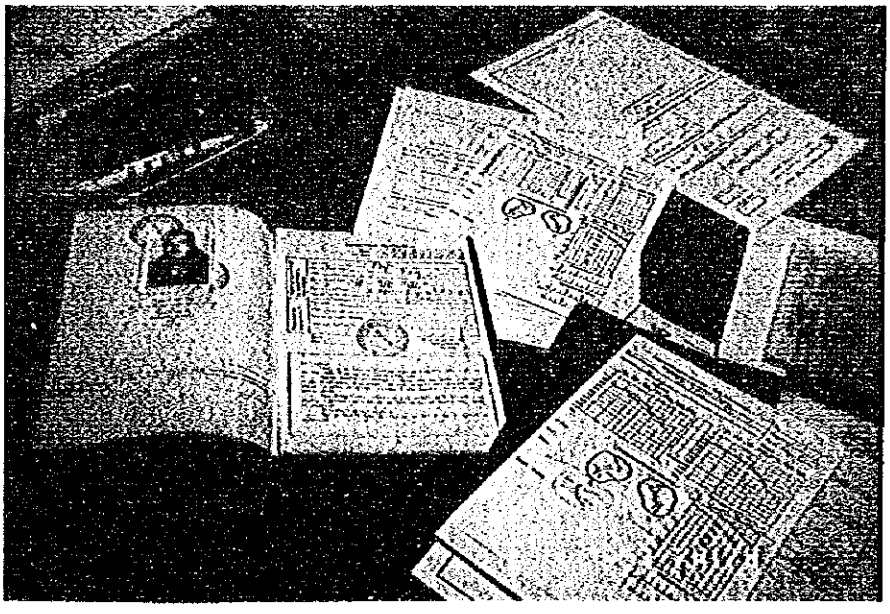
Old Anesthetic Instrument



NICU System



Obsolete Fiber Scope



Patient's Record
for Informed Consent

Abbreviations

AVR	Automatic Voltage Regulator
CCU	Coronary Care Unit
CT	Computed Tomography
DEN	Denar
DM	Deutsch Marks
DSA	Digital Substraction Angiography
E/N	Exchange of Notes
ECG	Electrocardiogram
ECHO	European Community Humanitarian Aid Office
PHARE	Poland Hungary Aid for Reconstructuring of Economy
GDP	Gross Domestic Product
ICU	Intensive Care Unit
IMF	International Monetary Fund
JICA	Japan International Cooperation Agency
MC	Medical Center
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
PTCA	Percutaneous Transluminal Coronary Angioplasty
PTCR	Percutaneous Transluminal Coronary Recanalization
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
USD	U.S. Dollar
WFP	World Food Programme
WHO	World Health Organizaiton
%	percent
cm	centimeter
kg	kilogram
°C	degree centigrade

CONTENTS

Chapter 1

Background of the Project

Chapter 1 Background of the Project

(1) The Former Yugoslav Republic of Macedonia (hereinafter referred to as "the Recipient Country") is a landlocked country located on the Balkan Peninsula. It is bounded by Bulgaria to the east, Serbia to the north, Albania to the west, and Greece to the south. The Recipient Country declared independence from the former Federation of Yugoslavia after a referendum was held in September 1991. At that time it introduced democracy and a multiple-party political system.

The economic situation of the Recipient Country is extremely severe: its borders were closed by UN sanctions against Serbia, and confrontation with Greece over the country's name and other issues due to the complex political situation of the Balkan Peninsula resulted in the loss of key export markets. The Recipient Country's GNP has decreased substantially, from $2,196 billion in 1991 to $1,635 billion in 1994. This severe economic situation has caused a lag in carrying out plans for the country's development, especially in the areas of basic social and economic facilities. Among these, the field of health care has been greatly affected. The number and technical level of doctors and other medical workers is of international standard, but due to difficulties in renewing medical equipment and supplying medicine, the Recipient Country has requested assistance from Japan.

Based on the Health Care Law of the Recipient Country, a pyramid-type medical system (referral system) is employed for medical care and health care. This system consists of primary medical care (health stations, health institutes), secondary medical care (general hospitals, medical centers), and tertiary medical care (clinics, clinical centers). There are two universities in this country, Skopje University and Bitola University, but only Skopje University has a medical faculty. Under the Recipient Country's medical system, this medical faculty is in the category of tertiary medical care, in other words, it is the supreme medical care facility. (There are 2,303 beds in this medical faculty, including those in the educational department.) Accordingly, upgrading the facilities in this medical faculty is an extremely pressing issue, as many patients are referred there from all types of medical institutions in the Recipient Country, and the number of in-patients

exceeds 48,000 a year.

The medical facilities of the Recipient Country were introduced by the former Federation of Yugoslavia in the 1970s. In the institutes and clinics of the Medical Faculty of Skopje University (hereinafter referred to as "the Hospital"), at that time modern medical equipment such as a Digital Gamma Camera, an After Loading System, a Linear Accelerator, and other radiology equipment was installed. Since then, there has been insufficient renewal and maintenance of such equipment for economic reasons. A USAID study done in 1994 at the request of the Recipient Country's Ministry of Health (hereinafter referred to as "the Ministry of Health") entitled "Report on a Survey Inventory and Evaluation of Clinical Equipment in Hospitals and Clinics of Macedonia" stated the following:

- 59.5% of the medical equipment at the Hospital is old, having been in use for 10 or more years.
- Not more than 74.0% of all the medical equipment is usable. Of the remainder, 12.0% has malfunctions and 8.2% is unusable.

The present situation is worse than it was at the time of the USAID study. Much of the medical equipment has been used exhaustively and it was so old that it couldn't be repaired because spare parts were no longer available. The facilities of Skopje Surgical Hospital (Hereinafter referred to as "the Surgical Hospital"), responsible for the Hospital's emergency department, are also old. The aforementioned USAID study stated the following:

- 71.7% of the medical equipment in the Surgical Hospital is old, having been in use for 10 or more years.
- Not more than 45.8% of all the medical equipment is usable. Of the remainder, 18.6% has malfunctions and 35.6% is unusable.

(2) The USAID report states that these conditions are very common in all the country's health and medical facilities. At present, the Ministry of Health, in accordance with macroeconomic reforms, has been planning a mid- or long-term plan for the

improvement of medical health with the support of the World Bank. The following measures are stressed to improve health care and medical treatment:

- Securing medical workers
- Upgrading of medical institutes
- Procurement of medical equipment

The Ministry is making efforts to improve health care and medical treatments, but due to financial difficulties, it is allocating most of its budget for securing medical workers' salaries and maintenance of existing medical equipment. It cannot budget for the purchase of medical equipment, and so it is concerned over the decline in quality of health care service.

The Ministry of Health has also been active in the improvement of the field of health and medical care, in line with the Government's policy for a market economy. As measures for this improvement, the Ministry is attempting to undertake
i) a re-examination of the existing medical insurance system, and
ii) a restructuring of the Hospital's organization, medical consultation and accounting.
The concept of the latter measure is to reorganize the Hospital's departments of diagnosis and treatment as a central hospital, and to centralize its organization, staff, accounting, and medical equipment in order to improve what the present management so called "expenditures over results". The plan will change the organization of the Hospital so that it can maintain itself economically. For these reasons, the Ministry of Health is requesting funds and technical assistance from the World Bank and WHO.

Since such efforts are not enough to overcome the current crisis, the Recipient Country's Government has proposed the "Medical Equipment Upgrading Plan" focused around the upgrading of medical equipment at the Institute and Clinics of the Faculty of Skopje University and Skopje Surgical Hospital, and has asked Japan for Grant Aid to that end.

In response to the request of the Recipient Country, the Government of Japan has decided to conduct a Basic Design Study Team on the Project, and it has entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent a study team to

the Recipient Country from July 9 to August 4, 1995, to study the necessity and suitability for upgrading of medical equipment, the appropriate scope and scale of the project and the contents of the requested equipment. In the course of discussions and field surveys, both parties confirmed a basic agreement on the Project and signed a minutes of discussion of the Project on July 31, 1995. The study team analyzed data on the Project collected in the Recipient Country and prepared the Draft Basic Study Report. In order to explain and to consult with the Recipient Country on the components of the draft report, JICA sent a study team to the Recipient Country from September 3 to 20, 1995.

This Basic Study Report contains viability, background, basic concept, basic design of the equipment, implementation plan and evaluation of the Project which depends on discussions with officials of the Recipient Country and field surveys at the study area. There are member lists of the study team, a study schedule, a list of parties concerned in the Recipient Country, minutes of discussion and other appendices at the back of the report.

Chapter 2

Contents of the Project

Chapter 2 Contents of the Project

2-1 Objectives of the Project

The purpose of "The Project for Upgrading the Medical Equipment" is the upgrading of important medical equipment of the Hospital at the top of the country's medical system (referral system). All of the medical equipment requested is essential for diagnosis and treatment. The supply of this medical equipment is expected to greatly contribute to the improvement of medical service in the Hospital and the Surgical Hospital.

2-2 Basic Concept of the Project

2-2-1 Cooperation Policy

In the implementation of the Basic Design Study on "The Project for Upgrading the Medical Equipment". (hereinafter referred to as the Project), the following are included:

- To understand the real needs of the institutions involved in the request, and to create a plan to fit those needs.
- To create an "equipment upgrading plan from the users' point of view".
- To create an equipment upgrading plan with a sufficient level of maintenance support.

The Basic Study Team visited all medical institutions requesting medical equipment, ascertained their current situation and confirmed what was requested, held technical and financial consultations with relevant personnel from the Ministry of Health, and finally, set up a medical equipment upgrading plan for the Hospital and the Surgical Hospital.

At first, 72 types of medical equipment were requested from 12 clinics and 7 institutes, however after consultation with the Hospital, the Surgical Hospital, and the Ministry of Health, the final request was for 72 types of medical equipment to be procured for 12 clinics and 5 institutes.

2-2-2 Results of Study on Request

The Basic Study Team studied priorities to each item of medical equipment requested by the

recipients. Then it presented the results to the Ministry of Health, and in consultation with the Hospital and Surgical Hospital, made final lists of equipment for the recipients.

The selection of medical equipment was determined based on positive and negative points following "Comments by the Japanese side on the items in 4. above" (see **Table 2-3-1**). As a result, the equipment be provided in the Project is as follows:

Priority	A (the equipment be provided in the project)	61
	B (the equipment be provided in case of the budget allowance)	11
Total		72

Except for the Universal Angiography System, most of these items are replacements for old equipment. They are used for basic diagnosis and treatment, so there will be no problems in the conditions of their use, installation space, operation, and maintenance supervision system (see section **2-3-2 Basic Plan** for details).

In accordance with the aforementioned medical equipment selection policy, consultation was made with the Ministry of Health. The details of the consultation regarding major equipment are as follows:

(1) Linear Accelerator

The Linear Accelerator, although given top priority by the government of Recipient Country in the very initial request, was not accepted by the Project Formulation Team of JICA. The reasons were its very high purchase price, costly operation and maintenance cost, and others. However, as noted in the list of equipment, this equipment is strongly requested by the Recipient Country, because the existing one which was installed in 1977 can not be operated any longer due to its long use and the lack of spare parts, and the number of patients that need treatment by such equipment increases all the time. On the other hand, the existing facilities were constructed in conformity with international standards and the technical skill level of operating personnel is at international standards. The same refers to the After Loading System as well as to the Digital Gamma Camera for the Institute of Pathophysiology.

(2) Universal Angiography System

It was decided that this item would be procured after a detailed study in which the following was noted:

- This equipment is key to the diagnosis of vascular diseases, which make up the top three major causes of death in the Recipient Country.
- An Angiography System for cardiology installed two years ago in the Hospital is operating smoothly.
- There are no technical problems with the maintenance supervision of the unit, and the minimum required budget can be secured.
- There were strong requests from the recipient country.

2-3 Basic Design

2-3-1 Basic Design Policy

(1) Policy concerning natural conditions

The equipment of the Project and its installation would not be influenced by natural conditions. Since the Recipient Country is influenced by a Continental and Mediterranean climate, there is a large temperature difference between day and night. The temperature during the month of July and August reaches 37-38 °C. On the other hand, most of the Clinics and Institutes are not air-conditioned. Accordingly, those which may require temperature control would have to be given special attention prior to the installation of equipment, including requests to institutions to bear the cost of works.

(2) Policy concerning procurement from third countries

The Recipient Country is landlocked in the Balkan Peninsula. In view of the fact that neighboring countries are capable of providing high-quality medical equipment and materials, procurement of equipment that would require regular and periodic technical services from those countries is also considered in addition to those originating in Japan.

Accordingly, procurement of such equipment as a Universal Angiography System, which would require regular and periodical technical servicing, would have to be considered with respect to the above-mentioned policy. The most suitable type of equipment

should be procured in consideration of necessary service availability after delivery, and based on the results of "the Study for procurement of equipment from the third countries".

(3) Ability to maintain/control the implementing institutions

In order to ensure effective and efficient use of the equipment after delivery, running costs of those equipment would have to be calculated. The Ministry of Health has secured the required budget amount as listed in **Table 2-4-4** as maintenance costs. The minimum amount necessary to cover the maintenance of the equipment has been secured by the Ministry of Health.

On the other hand, the number of doctors, engineers, nurses, and staff members involved in the medical care service is considered sufficient to operate the medical equipment as shown in **Table 2-4-10**. In addition, their technical skill level is at international standards.

(4) Policy concerning equipment planning

1) Basic equipment to be procured

Finally 83 types of medical equipment were requested by 13 Clinics and 7 Institutes of the Hospital. Among those, the order of priority for the equipment is as follows:

Priority	A (with 3 positive points)	61
	B (less than 2 positive points)	11
	C (with 3 or more negative points)	7
	X (the equipment be excluded from the project, however strongly requested by the recipient country)	4
Total		83

Most of the equipment is intended to replace existing and obsolete units for basic diagnosis and treatment. Since there are no difficulties in terms of installation space and the operation and management system of the equipment in accordance with the list, they will contribute significantly to the upgrading of medical services of the Hospital.

Among the equipment to be procured, the Universal Angiography System will require regular and periodic technical servicing, at least 3-4 times a year. Thus, the terms and conditions to provide regular and periodic technical service, and the supply system for spare parts and consumables would have to be considered for implementation.

Since the Recipient Country is landlocked, foreign trade is on the decline. Severe financial conditions and limited foreign currency reserves of the Recipient Country make procurement of spare parts and consumables difficult. Delivery of spare parts and consumables would be delayed due to the geopolitical situation of the Recipient Country. The Study Team have to consider the matters of maintenance, inspection, and repair of the equipment after delivery, and estimate the minimum necessary quantity of spare parts and consumables required for the equipment, as well as examine a sustainable supply system for them.

2) Procurement of an X-ray System

An X-ray system will be installed in the Institute of Radiology, which controls the X-ray radiology facilities of the Hospital. This institute has more than 20 X-ray radiography rooms and all patients who need X-ray diagnosis are processed at this Institute in principle.

Currently available X-ray systems are limited to general X-ray radiography, a fluoroscopy system, and an X-ray CT scanner installed 7 years ago. All of the other 17 units are out of use. Presently only 3 rooms are used for diagnosis.

A Universal Angiography System, a Remote Control Fluoroscopy-Radiography System and a General Radiographic X-Ray System will be installed in 3 of the 17 remaining vacant rooms. Those 3 rooms are old but are strongly and safely built for proper use of the equipment.

a) Universal Angiography System

The existing damaged X-ray radiography system will be removed in order to provide space for the installation of this system. The Study Team confirmed the radioactive protection wall was designed and constructed to international safety

standard and no additional work is necessary for installation of the equipment.

A transmitted electricity receiving facility is installed in the Institute. The Study Team confirmed, using a voltage tester that the voltage remains relatively stable and causes no adverse effects on the operation of the equipment.

b) Remote Control Fluoroscopy-Radiography X-Ray System
and General Radiographic X-Ray System

Old and obsolete X-ray systems still exist in the rooms designated for installation. No additional work for installation is required except for removal of the previous equipment.

c) Although the Ministry of Health planned the budget in consideration of proper use of the equipment, present economic conditions of the Recipient Country are dire. Since the Universal Angiography System needs regular and periodic technical servicing and the procurement of expensive consumables (X-ray tube, etc.), an appropriate system has to be considered for the provision of technical services after delivery. In this regard, the Institute of Cardiology installed an angiography system for cardiology 2 years ago and service engineers of the manufacturer stationed in the Hospital provide technical services at any time on request. (Cost of the technical service is 20DM/hour, which is considered inexpensive.) It is desirable that the equipment to be installed have a sufficient after-sale service system provided by the manufacturer.

3) Policy on Inland Transportation Route

Currently, the possible inland transportation routes are:

a) The route through the Black Sea and via the Port of Varna/Burgas, Bulgaria

b) The route via Germany/Hungary/Romania/Bulgaria

The final route will be decided in consideration of the port where the equipment will be forwarded.

4) Policy concerning term of works

Policy concerning the term of works implemented under the Project will be to complete all works within twelve months. **Table 3-1-1** summarizes the detailed plan concerning the term of works.

2-3-2 Basic Plan

(1) Plan for equipment

The selection policy for the equipment of the Project was to decide the priority of each item of equipment by giving it the following positive points and negative points, based on item 5 of the Attachment, "Comments by the Japanese side on the items in 4. above".

1) Positive points

P1 : Equipment to be utilized for treatment of common diseases including diagnostic treatment and prevention

P2 : Equipment to replace existing equipment that is already deteriorating

P3 : Essential equipment for primary health care identified by the World Bank, WHO, UNICEF, etc.

2) Negative points

N1 : Equipment not required for health care services such as diagnosis, treatment, or prevention

N2 : Simple equipment/furniture available locally

N3 : Highly advanced equipment to be utilized for research activities

N4 : Equipment with some difficulties in installation/infrastructure conditions

N5 : Expensive equipment less utilized because of small amount of testing/less number of patients

N6 : Equipment hazardous to environment

N7 : Equipment only utilized with an exclusive reagent kit available from a specific manufacturer

N8 : Equipment with financial/marketing difficulties in the procurement of consumable supplies and spare parts

3) Method of priority determination

Priority A: Equipment with 3 positive points

Priority B: Equipment less than 2 positive points

Priority C: Equipment with 3 or more negative points

In addition, equipment that replaces excluded equipment from the list is priority A, and additionally requested equipment is priority B.

Table 2-3-1 List of the Medical Equipment
(Original request & Mutual consentanious items)

A: with 3 positive points
B: less than 2 positive points
C: with 3 or more negative points
X: the equipment be excluded from the project, however strongly requested by the recipient country

Original Request Item		Q'ty		Point & Evaluation		Remarks
Institute of Radiology	Universal Angiography System	1	No alternation	P1, P2 N4, N5, N7, N8	A	Provided in the Project, results of the study for security, maintenance system, etc. and strongly requested by the recipient country.
	Universal Gyroscopic X-ray System	1	Remote control Fluoroscope-Radiography System	P1, P2, N8 P3	A	Revised name of the item into general equipment name
	General Radiographic X-ray System	1	No alternation	P1, P2, N8 P3	A	
	Universal Color Doppler	1	Excluded	P1, P3	C	Same equipment provided to other clinic in the Project, to avoid duplicate provision
Institute of Phathophysiology	Digital Gamma Camera (SPECT)	2	Excluded	P1, P2 N4, N5, N7, N8	X	Excluded, however strongly requested by the recipient country.
Institute of Radiotherapy and Oncology	After Loading System (Curietheraphy)	3	Excluded	P1, P2 N4, N5, N6, N8	X	Excluded , however strongly requested by the recipient country.
	Diagnostic Simulator complete with Planning System for Linear Accelerator	4	Excluded	P1, P2 N4, N5, N6, N8	X	Excluded , however strongly requested by the recipient country.
	Linear Accelerator of 4 or 6 MeV X-Ray and 5-12 MeV Electrons with Table and Personal Dosimeters including Spare Parts	1	Excluded	P1, P2 N4, N5, N7, N8	X	Excluded , however strongly requested by the recipient country.
	Cauterizer	1	Excluded		C	The item have to be used with above equipment excluded
Clinic of Infectious Disease	Rectosigmoidoscope	1	No alternation	P1, P3 N8	A	
	Ultra Sound System	1	No alternation	P1, P2, P3	A	
Clinic of Pulmoallergology	Bronchofiberscope	1	No alternation	P1, P2, N8 P3	A	
Clinical Center	Ambulance Car Fully Equipped	1	Excluded		C	Purchased by recipient country with local currency
Clinic of Otorhinolaryngology	Micro Motor System for E.N.T.	1	No alternation	P1, P2, P3	A	

	Bronchoscope 4mm Diameter, 300mm Long	1	No alternation	P1, P2, N8 P3	A	
	Bronchoscope 5mm Diameter, 300mm Long	1	No alternation	P1, P2, N8 P3	A	
	Operating Microscope	1	No alternation	P1, P2, P3	A	
	Microsurgical Kit for Otomicroscope	1	No alternation	P1, P2, P3	A	
	Grasping Forceps for Foreign Bodies 330mm long	1	Excluded		C	Included in Bronchoscope as an accessory
		1	Rhino-Pharyngo-larynofiberscope	P1, P2, P3	B	Additionally requested by the Ministry of Health.
		1	Pendular Computerized Electro-Nystagmograph	P1, P3	B	Additionally requested by the Ministry of Health.
		1	Endolaser for ENT	P1, P3	A	Additional request instead of Endolaser for Clinic of Opthalmology
Clinic of Nephrology	Microscope	1	No alternation	P1, P2, P3	A	
Clinic of Gynecology and Obstetrics	Phototherapy Unit	2	No alternation	P1, P2, P3	A	
	Neonatal Infusion Pump	2	No alternation	P1, P2, P3	A	
		1	ICU	P1, P2, P3	A	Additionally requested by the Ministry of Health
		1	NICU	P1, P3	A	Additionally requested by the Ministry of Health
		1	Mammographic X-Ray System	P1, P3	A	Additionally requested by the Ministry of Health
Clinic of Pediatrics	ECG 3 Channels	1	No alternation	P1, P2, P3	A	
	Microscope	1	No alternation	P1, P2, P3	A	
	Monitor for Intensive Care	2	Lowering of the priority	P1, P2, N7, N8 P3	B	The lowering of the priority be requested by the Ministry of Health,.
	Peritoneal Dialysis System Pediatric	1	Lowering of the priority	P1, P2, N7, N8 P3	B	The lowering of the priority be requested by the Ministry of Health,.
	Percutaneous O_2 Analyzer	1	Excluded		C	Already installed
Clinic of Hematology	Microscope with Photo-Equipment and Imunofluorescent	1	No alternation	P1, P3 N8	A	

	Technics					
	Microsceope with Camera & Accessories	1	No alternation	P1, P2, P3	A	
	Microscopes	4	No alternation	P1, P2, P3	A	
	Spectrophotometer	1	No alternation	P1, P2, P3	A	
	ECG 3 Channels	1	No alternation	P1, P2, P3	A	
		1	Coagulometer	P1, P3	B	Additionally requested by the Ministry of Health,.
		1	Infusion Pump	P1, P3	B	Additionally requested by the Ministry of Health,.
Clinic of Opthalmology	Operating Microscope	1	No alternation	P1, P2, P3	A	
	Aspiration and Irrigation Equipment	1	No alternation	P2	A	
	Endolaser Coagulator	1	Excluded		C	Ministry of Health request Endolazer for ENT instead of this
Clinic of Neuropsychiatry	EEG 16 Channels	1	No alternation	P1, P2, P3	A	
Clinic of Cardiology	Defibrilator	1	No alternation	P1, P2, P3	A	
	ECG 6 Channels	1	Excluded		C	Excluded because the equipment already provided
	Temporary Electrostimulator	2	No alternation	P1, P2, N8 P3	A	
	Monitor for Coronary Care	2	Lowering of the priority	P1, P2, N4, N8 P3	B	The lowering of the priority is requested by the Ministry of Health. .
Skopje Surgical Hospital	Anesthetic Equipment	2	No alternation	P1, P3	A	
	CO_2 Analyser	2	No alternation	P1, P2, N8 P3	A	
	Saturation Monitor and Pulseoxymeter	2	No alternation	P1, P2, P3	A	
	Choledochoscope	1	No alternation	P1, P2, N8 P3	A	
	Gastroscope	1	No alternation	P1, P2, N8 P3	A	
	Colonoscope	1	No alternation	P1, P2, N8 P3	A	
	Blood Cell Counter M-	1	No alternation	P1, P2, N8	A	

	T 540			P3		
	Blood Gas Analyzer	1	No alternation	P1, P2, P3	A	
	ICU 4Ch Monitor	2	Lowering of the priority	P1, P2, N4, N8 P3	B	The lowering of the priority be requested by the Ministry of Health,.
		3	Saturation Monitor and Pulseoxymeter	P1, P3	B	Additional number is requested by the Ministry of Health,.
Institute of Clinical Biochemistry	Biochemical Analyzer	1	No alternation	P1, P2, N8 P3	A	
	Spectrophotometer Lamda 2	2	No alternation	P1, P2, P3	A	
	Analyzer for Electrolits	2	No alternation	P1, P2, N8 P3	A	
	Gas Analyzer (AVL 990 pH)	1	No alternation	P1, P2, N8 P3	A	
	Laboratory Microscope	4	No alternation	P1, P2, P3	A	
	Centrifuge	2	No alternation	P1, P2, P3	A	
	Blood Cell Counter	1	No alternation	P1, P2, N8 P3	A	
	Ionide Exchange Resin	1	No alternation	P1, P2, P3	A	
	Densitometer	1	No alternation	P1, P2, P3	A	
	Microfuge	1	No alternation	P1, P2, P3	A	
Institute of Blood Transfusion	Cascade Pump HDK (Iwaki)	1	Cascade Pump	P1, P2, P3	A	Revised name of the item into general equipment name
	Magnet Pump 70R (Iwaki)	1	Magnet Pump	P1, P2, P3	A	Revised name of the item into general equipment name
	pH Meter	1	No alternation	P1, P2, P3	A	
Institute of Children Respiratory Disease	Coulter Counter	1	Blood Cell Counter	P1, P2, N8 P3	A	Revised name of the item into general equipment name
	Spectrophotometer	1	No alternation	P1, P2, P3	A	
	Inhalar	1	No alternation	P1, P2, P3	A	
	Flexible Bronchoscope	1	No alternation	P1, P2, N8 P3	A	
	Percutaneous O_2	1	No alternation	P1, P2, P3	A	
	Oxygen Analyzer with Sensor	1	Pulseoxymeter	P1, P2, P3	A	Name of the Equipment be changed, results of

						the study for its specifications
Clinic Gastroenterohepatology	Color Doppler for Abdominal Examination System	1	Color Doppler	P1, P3	A	Name of the Equipment be changed, results of the study for its specifications
	Video Endoscope System (Colono and Gastroscope	1	No alternation	P1, P3	A	
	Duodenoscope with Large Working Channel	1	No alternation	P1, P2, N8 P3	A	
	Endoscopic Sonography System	1	No alternation	P1, P3 N8	A	
		1	Laparoscope Set	P1, P3 N8	B	Additionally requested by the Ministry of Health,.
Clinic of Orthopedics		1	Arthrofiberscope System	P1, P3	B	Additionally requested by the Ministry of Health,.

(2) Plan of Installation Room for X-Ray Systems

The Universal Angiography System will be installed at point 1 in **Figure 2-3-1**. The room is on the first floor of the building. The equipment will be brought into the building by passing through a corridor 160 cm-wide from the lobby of the building (A), reaching point (B), where it will be taken through the 90 cm-wide doorway to room 1. Similarly, the Universal Gyroscopic X-ray System, and the General Radiographic X-ray System will be brought through a 120 cm-wide door, from point (A), through points (C) and (D), to rooms 2 and 3, respectively. These routes for carrying the equipment provide sufficient space in terms of height and width, and there are no obstacles.

There are no problems regarding equipment installation and operation; however, wall and ceiling tiles in the rooms have fallen off and need to be replaced.

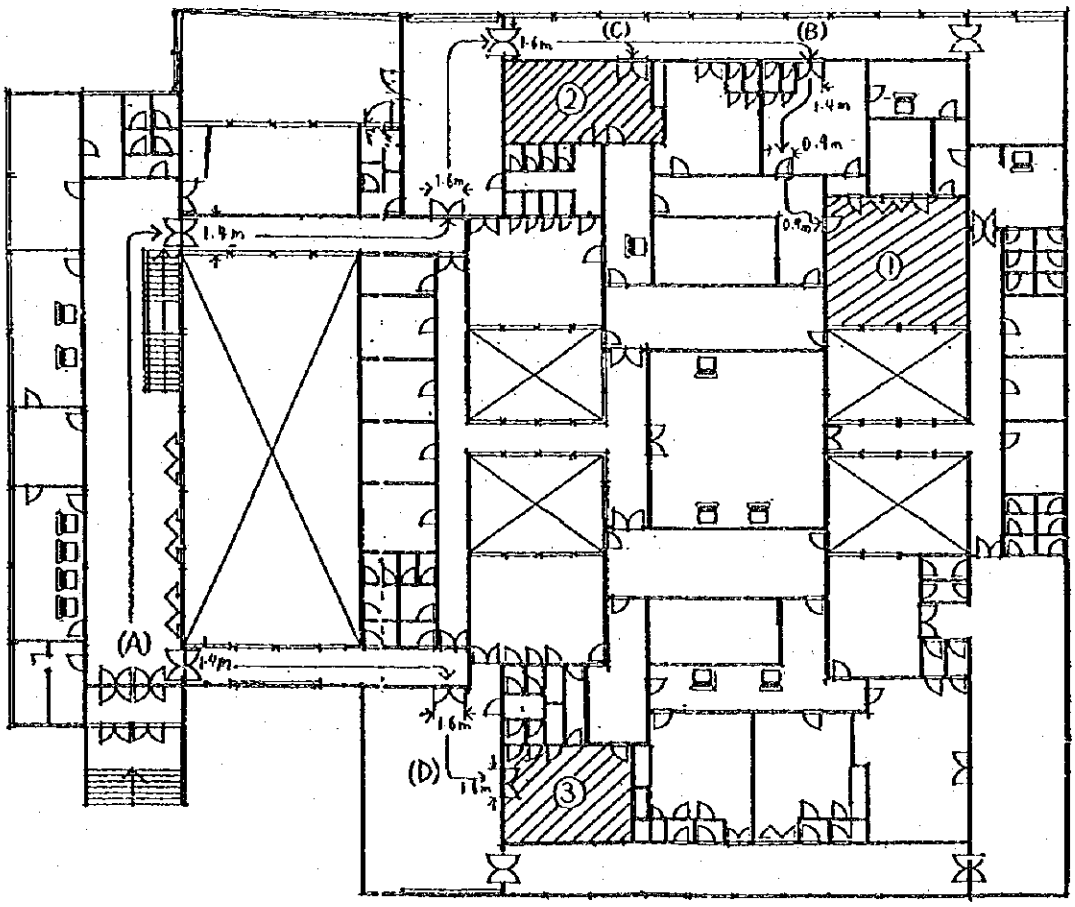
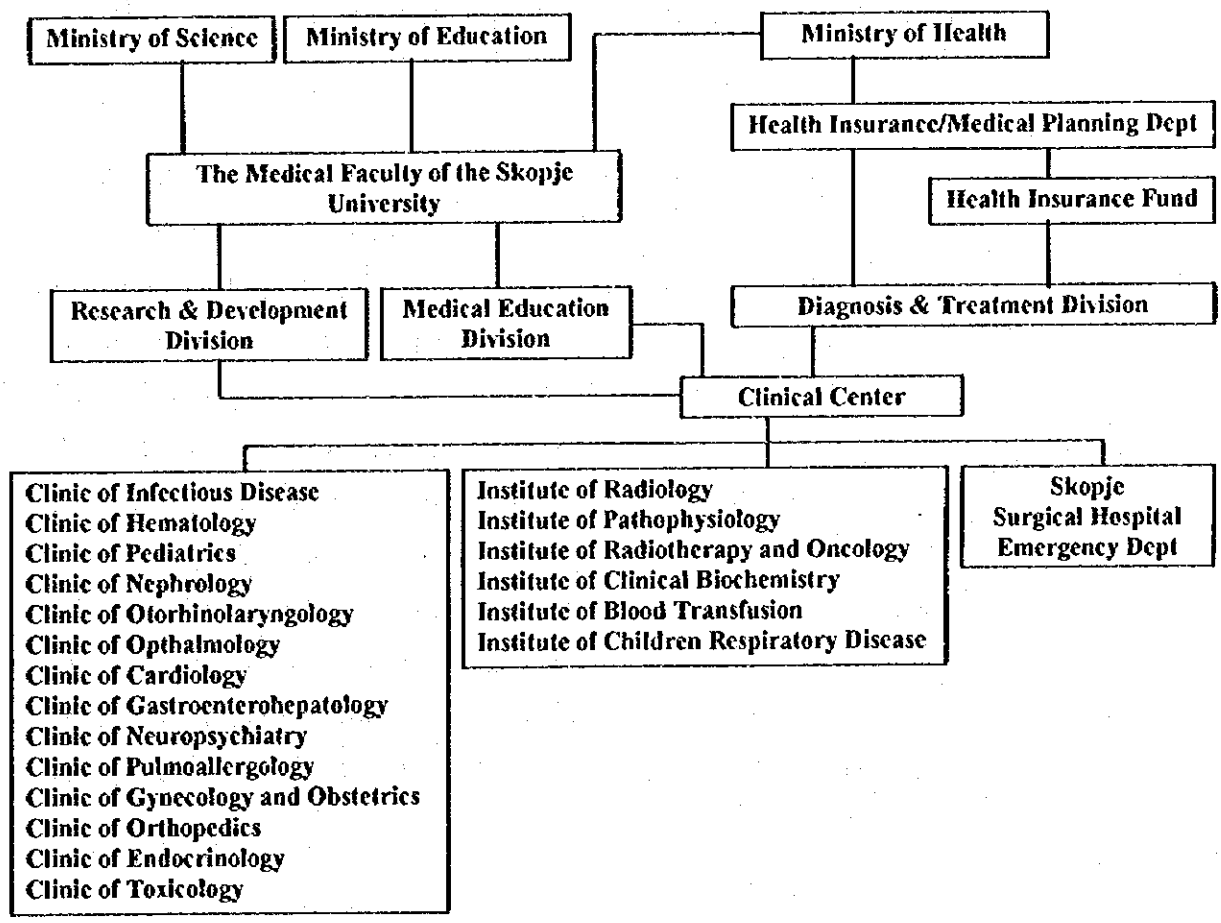


Figure 2-3-1 Plan of Installation Room for X-Ray System (Institute of Radiology)

2-4 System for Implementing the Project

2-4-1 Organization

The Hospital constitutes a part of the Skopje University. The Hospital comes under the jurisdiction of 3 ministries: the Ministry of Education, the Ministry of Science, and the Ministry of Health. The Ministry of Education and the Ministry of Science respectively manage the education department and the research and development department thereof. The Ministry of Health controls the diagnosis/medical care department. The organization chart associated with the Hospital is as shown hereunder. Health insurance/medical planning department of the Ministry of Health is responsible for overseeing the organization, personnel affairs, financial affairs and any other activities of the Clinical Center that constitute the core of the Hospital. Clinics and Institutes provide medical care services.



2-4-2 Budget

(1) While the budget of the Ministry of Health is appropriated from the national treasury, its amount and percentage relative to the total national budget are not significant as shown in **Table 2-4-1**. The majority of the budget of the Ministry of Health covers public health programs and their related expenses, including overhead, expenses for preventive inoculation and promotion of blood donation programs. The majority of expenses associated with diagnosis/medical care services is covered by the Health Insurance Fund. The system of Health Insurance Fund has been subject, since independence in 1991, to the provisions of Health Care Law, Article 62, under which all nationals (regardless of whether in public service or not) are obliged to be insured as a general rule. The balance of expenditures and income of the Health Insurance Fund had been in deficit since its inauguration until 1994 when it turned around to show a surplus as shown in **Table 2-4-2** hereunder. (Deficits accumulated up to 1994 were compensated by the national treasury)

(2) Management of the Hospital is carried out by the Clinical Center under the direct jurisdiction of the Ministry of Health while financial affairs of the Hospital are controlled centrally. The balance of expenditures and revenues of the Clinical Center is shown in **Table 2-4-3** hereunder and has been in deficit during the past 3 years. The deficit has been covered by the deferred payment of allowances. No less than 85% of the total income has been covered during the past 3 years by the Health Insurance Fund. However, donations from private sector corporations and Macedonian nationals staying overseas have been increasing during recent years to as much as 98,072 thousand denars in 1994, representing approximately 9% of the total income. Major expenditures in 1994 were 16,779 thousand denars, covering maintenance of medical equipment, 25,191 thousand denars covering insurance to cover failures and so forth of medical equipment, and 199,883 thousand denars covering procurement of pharmaceuticals and consumables.

(3) The budget as shown in **Table 2-4-4** is planned by the Clinical Center to cover medical equipment to be newly introduced and installed, including those to be provided under the Project. 1,394 thousand DM and 139 thousand DM respectively are appropriated to cover maintenance of the Universal Angiography System as well as maintenance of

expensive items of medical equipment that would require a substantial budget appropriation to cover consumables and insurance to cover medical equipment. The approximate amount of maintenance-related costs and the cost of consumables for major items of medical equipment to be procured under the Project are expected to be as shown in **Table 2-4-5** hereunder. If approved as it is, the budget so appropriated would suffice.

10,240 thousand DM from the Health Insurance Fund amounted to about one-half of the total revenue, which is considered practical and realistic in light of the growth of revenue and expenditure of the Health Insurance Fund during past 3 years. Also, 3,861 thousand DM from the Health Insurance Fund (The Fund compensates 20% thereof) cover medical care provided travel to and from foreign countries, because the lack of medical equipment has forced many nationals of the Recipient Country to seek medical care in foreign countries. Implementation of the Project would serve to allow for the provision of medical care services in the Recipient Country, thus providing a significant saving of costs. In light of the above conditions, the projected income is considered practical and realistic. Effects of the provision of medical care services by the use of the equipment to be procured under the Project on the management of the Clinical Center will be discussed in section **2-4-3 Financial Analysis**.

Table 2-4-1 National Budget and the Budget for the Ministry of Health

(in thousand Denars)

	National Budget	Ministry of Health	% of the Budget of the M. of Health in the National Budget
1993	15,116,500	14,855	0.1%
1994	49,458,000	138,613	0.28%
1995	51,200,000	208.898	0.4%

Table 2-4-2 Revenues and Expenditures of the Health Insurance Fund within the Period of 1992-94

(in thousand US dollars)

	1992	1993	1994
Revenue	134,194	155,604	186,675
Expenditure	137,888	156,410	184,379
Balance	-3,694	-806	2,296

Table 2-4-3 Revenues and Expenditures of the Skopje University Hospital

(in thousand Denars)

	1992	1993	1994
Revenue	12,107,027	537,553	1,106,465
Health Insurance Fund	10,985,500	473,708	955,477
Participation by Patients	595,057	19,782	52,915
Others(Donation)	526,470	44,063	98,072
Expenditure	13,348,005	617,840	1,274,172
Salary and Contribution	6,114,626	366,245	695,249
Drugs/Consumable	3,508,088	93,614	199,883
Maintenance	97,694	8,128	16,779
Insurance for Equipment	216,332	11,461	25,191
Electricity and Energy	125,272	6,155	12,298
Water	67,211	4,701	14,625
Fuel	267,789	9,903	23,443
Food	625,471	21,923	47,417
Depreciation/Amortization	1,039,050	38,234	93,086
Others	1,286,468	57,475	146,201
Balance	-1,240,978	-80,287	-167,707

Table 2-4-4 Budget Plan for the Installation of New Medical Equipment in the Medical Faculty of the Skopje University (1996)

(in thousand DM)

Transport CIF site/Installation	1,268
Adaptation of the office	279
Service and maintenance (First Year)	1,394
Insurance	139
Depreciation/Amortization	2,789
Operation Costs	9,808
Total Expenditures	15,677
Health Insurance Fund	10,240
Participation by patients	2,991
Expenditures for Medical Treatment abroad, including transportation fee, from the Fund (60%)	3,861
Treatment of foreigner	1,318
Other treatment	176
Donation	2,960
Financial Sources	21,545

2-4-3 Financial Analysis

Management of the Hospital is the responsibility of the Clinical Center and the balance of revenues and expenditures thereof has been in deficit during the past 3 years. As shown in **Table 2-4-8**, the level of revenue of the Hospital was 1,107 million denars in 1994, with a loss of 168 million denars in the same year, with the balance of financial revenues and expenditures being -75 million denars. The deficit has been covered by the deferred payment of allowances, thus ensuring that the financial position is kept in order. Basically, the Hospital's main source of revenue is the national treasury, and financial basis is warranted. Although financial basis is secured, the current state of management of the Hospital which is in deficit is not desirable.

The Hospital should realize self-support management by securing an increase in income by providing high quality medical care services through the introduction of a higher level of medical care technology and through reinforcement with the latest medical equipment.

As one measure to achieve this end, the procurement of medical equipment under the Grant Aid Cooperation Scheme of Japan to contribute to the self-support of the Hospital will be examined. The financial plan of the hospital will be prepared by projecting operation of the Hospital.

(1) Improvement of balance by the introduction of large medical equipment

Provision of 72 items of medial equipment targeted for reinforcement of the Hospital is under the Grant Aid Cooperation Scheme of Japan. Effects on the financial status of the Hospital by the introduction of 5 types of major medical equipment that are considered to contribute significantly to the increase in income of the Hospital will be examined. Other types of medical equipment are considered to likewise contribute to the improvement in the quality of health care services to be provided and it is assumed that it would also serve to increase income of the Hospital as will be discussed later.

1) Increase in revenue due to the performance of major medical equipment

The expected increase in revenues as a result of the performance of 5 types of major medical equipment is summarized in **Table 2-4-5** hereunder to show significant prospective increases.

Table 2-4-5 Expected Increase in Revenue
due to the Installation of New Medical Equipment (Base Year:1996)

Items	Growth of the number of treatment per year	Unit price of each treatment in denars	Growth of revenue from the treatment per year in million denars
Universal Angiography System	1,850	6,750	12.5
Universal Gyroscopic X-ray System	5,300	1,350	7.2
General Radiographic X-ray System	15,800	810	12.8
Mammographic X-ray System	5,300	1,080	5.7
Color Doppler for Abdominal Examination System	5,300	1,350	7.2
Total			45.3

2) Increase in expenditure due to the operation of major equipment

The expected increase in expenditure as a result of the operation of major equipment with maintenance fees and consumables is summarized in **Table 2-4-6**. Since the Hospital has barely enough doctors and staff to operate the equipment, as mention in section **2-4-4**, no increase in personnel expenditures is expected. "Others" in **Table 2-4-6** refers to mean utility expenditures such as electricity, water supply, etc.

Table 2-4-6 Expected Increase in Expenditure
due to the Installation of New Medical Equipment (Base Year:1996)

(in million denars)

Items	Maintenance Cost		Drugs/Consumables		Others
	Technical Cost	Parts	1996	1997	
Universal Angiography System	0.14	1.5/2 years	0.0	6.6	0.1
Universal Gyroscopic X-ray System	0.08	0.6	0.0	1.7	0.1
General Radiographic X-ray System	0.08	0.3	0.0	0.9	0.2
Mammographic X-ray System	0.08	0.3	0.0	0.6	0.1
Color Doppler for Abdominal Examination System	0.08	0.2 0.4/2 years	0.0	0.8	0.1

3) The case to introduce major medical equipment under the Grant Aid Cooperation Scheme of Japan

Effects on the operation of the Hospital when major medical equipment is procured under the Grant Aid Cooperation Scheme of Japan are summarized in **Table 2-4-7** hereunder. Because the provision of consumables is expected to take place simultaneously in 1996 when medical equipment will be procured, an increase in income of the Hospital by 42.9 million denars is projected. From 1997 onward, an increase in income of the Hospital by 53.7 million denars per year on average is projected to contribute significantly to the improvement of the financial status of the Hospital. The following are assumed as preconditions for the projection of income of the Hospital:

a) Rate of increase in medical care related income :

10%/year (- 1966), 20%/year (1997 -)

b) Rate of increase in expenditure

- Cost of maintenance :10%/year
- Cost of pharmaceuticals/consumables :10%/year
- Other costs :10%/year

Table 2-4-7 Effectiveness to the Profit due to the Installation of New Medical Equipment

(in million Denars)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Increasing Revenue from Diagnosis and Treatment	45.3	49.9	54.8	60.3	66.4	73.0	80.3	88.3	97.1	106.9
Expenditures										
Maintenance	1.9	4.1	2.3	5.0	2.7	6.1	3.3	7.3	4.0	8.9
Consumables, etc.	0.0	10.6	11.7	12.8	14.1	15.5	17.1	18.8	20.7	22.7
Others	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Total Expenditures	2.5	15.3	14.5	18.4	17.4	22.2	21.0	26.7	25.2	32.2
Profit and Loss	42.9	34.5	40.3	41.9	48.9	50.8	59.3	61.6	71.9	74.7

(2) Financial Plan

The economy of the Recipient Country, which had remained stagnant since 1991, began to recover slightly in 1994, the price level has been stabilized, and the budget of the Ministry of Health and the income of the Health Insurance Fund are showing increases. The Hospital expects the decrease in medical care expenses to be shared by the Health Insurance Fund for patients seeking overseas medical care services through the renovation and reinforcement of medical equipment to be procured under the Project as well as increase in income from foreign national recipients of medical care services.

1) Income

The following rate of growth of revenue is assumed by judging the following items comprehensively.

a) Rate of growth in revenue of the Health Insurance Fund : 15.7%/year (1992-1994)

b) Rate of increase in revenue due to the introduction of new medical equipment :

c) Increase in the number of patients as a result of upgrading hospital quality :

Year	Growth Rate of Revenue
1995-1996	15%/year
1997-	8%/year

2) Based on the growth of revenue (number of patients, items of medical care services, unit price of medical care service), expenditures will also increase.

Growth of revenue is projected as follows, taking into consideration the rise in prices as follows.

	1995-1996	1997-
Personnel	15%/year	5%/year
Maintenance	15%/year	5%/year
Consumables, etc.	15%/year	10%/year
Others	15%/year	10%/year

Table 2-4-8 Financial Projection

(in million Denars)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Revenues (without)	1,107	1,272	1,463	1,580	1,707	1,843	1,991	2,150	2,322	2,508	2,709	2,952
Revenues (with: Equipment)	0	0	45	50	55	60	66	73	80	88	97	107
Total Revenues	1,107	1,272	1,509	1,630	1,762	1,904	2,057	2,223	2,402	2,596	2,806	3,032
Expenditures												
Personnel	695	799	919	965	1,014	1064	1118	1173	1232	1294	1358	1426
Maintenance Cost	17	19	22	23	24	26	27	28	30	31	33	34
Drugs/Consumables	200	230	264	291	320	352	387	426	468	515	567	623
Others	269	310	356	392	431	474	521	573	631	694	763	839
Depreciation /Amortization	93	93	93	93	93	93	93	93	93	93	93	93
Total Expenditure (without)	1,274	1,451	1,655	1,764	1,882	2,009	2,164	2,294	2,454	2,627	2,814	3,017
Total Expenditure (with:Equipment)	0	0	2	15	15	18	17	22	21	27	25	32
Grand Total of Expenditures	1,274	1,451	1,658	1,780	1,896	2,027	2,163	2,316	2,475	2,627	2,814	3,017
Profit/Loss	-168	-179	-149	-149	-135	-124	-106	-93	-73	-57	-34	-17
Financial Position	-75	-86	-56	-56	-42	-30	-13	0	21	36	59	76
Financial Balance												
National Funds	75	86	56	56	42	30	13	0	0	0	0	0
Financial Balance	0	0	0	0	0	0	0	0	2	16	38	52

3) Projection of operation of the Hospital

To project the long term state of operations of the Hospital up to 2005, the management of the Hospital is analyzed and its results are summarized in Table 2-4-8.

Income of the Hospital is projected to increase year after year as a result of the introduction of new equipment and the improvement of the financial status of the Hospital. The financial position of the Hospital is projected to turn to a surplus in 2002. The amount from the national treasury to cover the deficit of the Hospital will continue to decrease until 2001, when the compensation will no longer be needed. The projected operation of the Hospital based on the financial plan indicates that the

financial status of the Hospital will continue to improve as a result of the introduction of new medical equipment. Under the trial calculation referred to hereinabove, the balance will turn to a surplus. The pre-condition of this result is the increase in revenue of the Hospital. Another prerequisite is the upgrading of hospital quality as a result of renovations and reinforcements of medical equipment.

- Increase in the number of patients, the number of items covered for diagnosis, and the unit price of medical care services
- Increase of patients who have received medical care in foreign countries but are now willing to receive medical care provided in the Recipient Country
- Increase in revenue from foreign patients who will be treated in the Recipient Country

As the above study shows, the reinforcement of medical equipment in the Hospital will result in an upgrading of quality of health care service provided by the Hospital and substantially improve the financial status of the Hospital. Provisions for medical equipment from Japan will contribute significantly in this regard.

4) Estimation of Operation and Maintenance Cost

Estimation of Operation and Maintenance Cost of major equipment is shown in **Table 2-4-9.**

Table 2-4-9 Operation and Maintenance Cost (1/3)

	Medical Equipment	Operation & Maintenance Cost										
		Operation & Maintenance Cost - I (Technical Cost)			Operation & Maintenance Cost - II (Spare Parts)			Drugs / Consumables				
		Unit Price	Q'ty	Sub-Total (Thousand Yen)	Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)	Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)
1	Universal Angiography System	1,000	3	3,000	X-Ray Tube	4,000	1	4,000	Contrast Medium	1,430	1,850	2,646
					Other Parts	3,500	1	3,500	Catheter	6,500	1,850	12,025
	Operation Day : 264 days/year	Technical Cost							Film	650	1,850	1,203
	Patient : 7 /day	Only										
												Total (Thousand Yen)
	Cost Estimation (1st year)			-				-				-
	Cost Estimation (2nd year)			3,000				-				15,873
	Cost Estimation (3rd year)			3,000	Other Parts			3,500				15,873
	Cost Estimation (4th year)			3,000	X-Ray Tube			4,000				15,873
	Cost Estimation (5th year)			3,000	Other Parts			3,500				15,873
	Cost Estimation (6th year)			3,000	X-Ray Tube			4,000				15,873

	Medical Equipment	Operation & Maintenance Cost										
		Operation & Maintenance Cost - I (Technical Cost)			Operation & Maintenance Cost - II (Spare Parts)			Drugs / Consumables				
		Unit Price	Q'ty	Sub-Total (Thousand Yen)	Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)	Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)
1	Universal Angiography System	Technical Cost		353	X-Ray Tube	4,000	1	4,000	Contrast Medium	1,430	1,850	2,646
		Only			Other Parts	3,500	1	3,500	Catheter	6,500	1,850	12,025
	Operation Day : 264 days/year	A Manufacturer							Film	650	1,850	1,203
	Patient : 7 /day	Engineering Fee										
		in Macedonia										
		1,200 x 7hours										
		x 2persons x days										
												Total (Thousand Yen)
	Cost Estimation (1st year)			-				-				-
	Cost Estimation (2nd year)			353				-				15,873
	Cost Estimation (3rd year)			353	Other Parts			3,500				15,873
	Cost Estimation (4th year)			353	X-Ray Tube			4,000				15,873
	Cost Estimation (5th year)			353	Other Parts			3,500				15,873
	Cost Estimation (6th year)			353	X-Ray Tube			4,000				15,873

Table 2-4-9 Operation and Maintenance Cost (2/3)

	Medical Equipment	Operation & Maintenance Cost - I (Technical Cost) Unit Price	Q'ty	Sub-Total (Thousand Yen)	Operation & Maintenance Cost - II (Spare Parts) Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)	Drugs / Consumables Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)	Total (Thousand Yen)
2	Universal Gyroscopic X-ray System	800	1	800	X-Ray Tube	1,500	1	1,500	Film	650	5,300	3,445	
					Other Parts	1,400	1	1,400	Barium	130	5,300	689	
	Operation Day : 264 days/year	2 days/year											
	Patient:20/day	Technical Cost											
		Only											
	Cost Estimation (1st year)			-				-				-	-
	Cost Estimation (2nd year)			800				-				4,134	4,934
	Cost Estimation (3rd year)			800	Other Parts			1,400				4,134	6,334
	Cost Estimation (4th year)			800	X-Ray Tube/Other Parts			2,900				4,134	7,834
	Cost Estimation (5th year)			800	Other Parts			1,400				4,134	6,334
	Cost Estimation (6th year)			800	Other Parts			1,400				4,134	6,334

	Medical Equipment	Operation & Maintenance Cost - I (Technical Cost) Unit Price	Q'ty	Sub-Total (Thousand Yen)	Operation & Maintenance Cost - II (Spare Parts) Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)	Drugs / Consumables Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)	Total (Thousand Yen)
3	General Radiographic X-ray System		1	800	X-Ray Tube	1,000	1	1,000	Film	130	15,800	2,054	
					Other Parts	700	1	700					
	Operation Day : 264 days/year	2 days/year											
	Patient : 60 /day	Technical Cost											
		Only											
	Cost Estimation (1st year)			-				-				-	-
	Cost Estimation (2nd year)			800				-				2,054	2,854
	Cost Estimation (3rd year)			800	Other Parts			700				2,054	3,554
	Cost Estimation (4th year)			800	Other Parts			700				2,054	3,554
	Cost Estimation (5th year)			800	Other Parts			700				2,054	3,554
	Cost Estimation (6th year)			800	X-Ray Tube/Other Parts			1,700				2,054	4,554

Table 2-4-9 Operation and Maintenance Cost (3/3)

	Medical Equipment	Operation & Maintenance Cost										
		Operation & Maintenance Cost - I (Technical Cost)			Operation & Maintenance Cost - II (Spare Parts)			Drugs / Consumables				
		Unit Price	Q'ty	Sub-Total (Thousand Yen)	Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)	Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)	Total (Thousand Yen)
4	Mammographic X-ray System	800	1	800	X-Ray Tube	1,000			Film	260	5,300	1,378	
					Other Parts	700							
	Operation Day : 264 days/year	2 days/year											
	Patient : 20 /day	Technical Cost											
		Only											
	Cost Estimation (1st year)			-				-				-	-
	Cost Estimation (2nd year)			-				-				1,378	1,378
	Cost Estimation (3rd year)			800	Other Parts			700				1,378	2,878
	Cost Estimation (4th year)			800	Other Parts			700				1,378	2,878
	Cost Estimation (5th year)			800	Other Parts			700				1,378	2,878
	Cost Estimation (6th year)			800	X-Ray Tube/Other Parts			700				1,378	2,878

	Medical Equipment	Operation & Maintenance Cost										
		Operation & Maintenance Cost - I (Technical Cost)			Operation & Maintenance Cost - II (Spare Parts)			Drugs / Consumables				
		Unit Price	Q'ty	Sub-Total (Thousand Yen)	Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)	Items	Unit Price (Yen)	Q'ty	Sub-Total (Thousand Yen)	Total (Thousand Yen)
5	Color Doppler for Abdominal Examination System		1	200	Probe	1,000	1	1,000	Printer Paper	8,000	120	960	
					Other Parts	500	1	500	Gel	195	5,300	1,034	
	Operation Day : 264 days/year	1 days/year											
	Patient : 20 /day	Technical Cost											
		Only											
	Cost Estimation (1st year)			-				-				-	-
	Cost Estimation (2nd year)			200				-				1,994	2,194
	Cost Estimation (3rd year)			200	Other Parts			500				1,994	2,694
	Cost Estimation (4th year)			200	X-Ray Tube			1,500				1,994	3,694
	Cost Estimation (5th year)			200	Other Parts			500				1,994	2,694
	Cost Estimation (6th year)			200	Probe/Other Parts			1,500				1,994	3,694

2-4-4 Required Personnel

Personnel of the Medical Faculty of Skopje University as shown in Table 2-4-10

Table 2-4-10 Number of Staff in Clinics/Institutes

	Number of doctor	Number of Staff incldg. nurse
Institute of Radiology	21	31 (incldg. 6 Radiation Engineer)
Institute of Phathophysiology	12	28
Institute of Radiotherapy and Oncology	28	137
Clinic of Infectious Disease	27	68
Clinic of Pulmoallergology	36	31
Clinic of Otorhinolaryngology	21	63
Clinic of Nephrology	36	150
Clinic of Gynecology and Obstetrics	58	313
Clinic of Pediatrics	50	180
Clinic of Hematology	17	38
Clinic of Opthalmology	16	60
Clinic of Neuropsychiatry	34	153
Clinic of Cardiology	33	150
Skopje Surgical Hospital	61	313
Institute of Clinical Biochemistry	4	55(Inspection Engineer)
Institute of Blood Transfusion	25	120
Institute of Children Respiratory Disease	40	146
Clinic of Gastrocnterohepatology	20	80

Chapter 3

Implementation Plan

Chapter 3 Implementation Plan

3-1 Implementation Policy

3-1-1 Implementation Concept

Implementation of the project will be carried out by contracting, after the signing of the Exchange of Notes (E/N) by the governments concerned, a consulting corporation of Japanese nationals as the agent of the Ministry of Health who will manage and control all works beginning with the study and selection of equipment to be procured, preparation of Tender Documents, submission and evaluation of tenders, management and control of transport/installation process schedule, completion of installation and test/inspection, and delivery.

The Hospital and Surgical Hospital are considered favorable for the implementation of the Project without any fuss, as these facilities are located in the center of Skopje, where there are good traffic and communications services.

Convenience of operation, maintenance, inspection and repair after delivery as well as spare parts and consumables availability will be fully taken into consideration for the selection of the equipment to be procured. (The quantities referred to hereinabove shall be determined by assuming that a minimum of 6-10 months will be required for the delivery of spare parts/consumables from the issue of orders by the Ministry of Health after delivery. Types and quantities which would be needed for each items will be taken into account in consideration of frequency/conditions of use, and so forth.) Manufacturers shall be held responsible for the trial run and guidance of operation for certain types of equipment while maximum care will be taken to ensure that factory tests and inspection prior to shipment will be fully carried out.

Personnel including laborers required for the installation of equipment shall be secured in principle in Skopje, while engineers will be dispatched from Japan for installing equipment that requires specialized skill and technique.

It is necessary to examine carefully in the scheduling of each stage of implementation works

concerning removal of existing equipment, delivery and works associated with the installation, installation and trial run of the equipment to be supplied together with the required technology transfer. Major items involved therein will be as follows:

(1) The equipment to be procured under the Project, the Universal Angiography System, the Remote Control Fluoroscopy-Radiography System, and the General Radiographic X-ray system will replace the existing old equipment. The rooms in which they are installed were designed and constructed in conformity with international standards applicable to X-ray radiography rooms, hence no special construction work such as for radiation shielding walls is required. However, the existing and old X-ray radiographic equipment would have to be removed prior to the delivery of the equipment to be procured. Accordingly, delivery, time, and procedure of installation of the equipment would have to be discussed in details beforehand by and between the parties concerned.

(2) Most of the equipment to be procured under the Project will replace existing and old equipment, thus requiring removal of the existing equipment prior to delivery of the equipment to be supplied. Accordingly, discussions in detail between the parties concerned would be required with regard to delivery, time, and procedure of installation of the equipment.

(3) The work schedule would have to incorporate a sufficient time margin so that technology transfer to medical doctors and engineers in charge of the Ministry of Health and the Hospital is ensured during the trial run, and operational adjustments of the equipment to be procured. Operating instructions would be explained in detail simultaneously. Accordingly, discussions would have to be made between the parties concerned beforehand and in sufficient detail with regard to the delivery, time, and procedure of installation of the equipment.

(4) Vendors of the equipment to be procured would have to be instructed appropriately with regard to the implementation of all works involved and should be requested to submit a schedule of dispatching their engineers.

The party responsible for the implementation of the Project, the Consultant, and works concerning the procurement of equipment shall be as follows:

(1) Party responsible for the implementation of the Project

The responsible party of the Recipient Country is the Ministry of Health. The Ministry of Health will act as the contracting party of the Recipient Country. The organization in charge of implementing the Project will be the Hospital Management Department of the Ministry. While the Ministry of Health will have to cooperate in regard to the selection of persons in charge of every medical institution concerned, unpacking, delivery, assembly/trial run of the equipment, cooperation of every medical institution concerned will be ensured with regard to the following:

1) Preparation of work schedule of technology transfer concerning trial run/guidance of operation/troubleshooting of the equipment.
2) Appointment of focal point of item 1).
3) Establishment of the system to accept the equipment including appointment of persons in charge of related facilities including those to supply electricity, water and drainage.

The Minister in charge of the Aid Coordination shall be responsible for customs clearance, inland transportation, and so forth.

(2) Consultant

After the signing of the Exchange of Notes (E/N) between both governments, the Ministry of Health shall sign the Consultation Agreement with a consulting corporation of Japanese nationals with regard to the implementation design of the equipment to be procured under the Project, works associated with tendering, and management of installation works. The agreement so signed will be validated subject to the approval of the Japanese Government. The Consultant shall be responsible for the implementation of the following works under the Agreement:

1) Design phase - Preparation of implementation design documents including design drawings, technical specifications, and any other technical documents, preparation of tender procedure, and preparation of

contract documents.

2) Tendering phase - Examination of potential bidders, evaluation of the contents of the Tender, and assistance to the conclusion of the contract.

3) Implementation phase - Supervision of project implementation including check /approval of implementation drawings, inspections based on design documents, control of work schedule, issue of certificates and the like, and works concerning coordination/liaison.

(3) Vendors of the equipment to be procured

Vendors of Japanese nationals of the equipment to be procured who shall be determined on the basis of open tender shall enter into an equipment procurement agreement with the Ministry of Health based on the Exchange of Notes (E/N) and in accordance with "the Guideline of Procurement" under the Japanese Grant Aid Scheme. This Agreement shall be validated subject to the approval of the Japanese Government. The vendors shall implement the following under the Agreement.

1) Procurement, transportation and delivery of equipment.

2) Installation works of equipment, technical guidance concerning operation, maintenance and repair.

In addition, the vendors shall be responsible for assistance concerning maintenance including procurement of parts and provision of technical assistance during the free-of-charge warranty period after delivery.

(4) Japan International Cooperation Agency (JICA)

The Grant Aid Cooperation Department of Japan International Cooperation Agency shall provide guidance to the Consultant and Vendors in order to ensure that the project will be implemented appropriately in accordance with the system of the Grant Aid Program. Also, JICA will promote implementation of the project through consultation with the party responsible for the implementation of the project whenever so required.

3-1-2 Implementation Conditions

Sufficient space for installation of the equipment to be procured has already been secured, with connection and smooth supply of water and drainage guaranteed by every medical institution of the Hospital. Electricity is also supplied to every item of equipment and voltage actually measured during the study is considered to present no problems. However, power outages and voltage drops were experienced during the previous year because of a shortage of power generation by hydraulic plants as a result of drought. Hence, an Automatic Voltage Regulator (AVR) may be required for certain voltage sensitive equipment.

Also, all existing equipment is old and installed in the independent clinic buildings scattered throughout the vast campus of the Medical Faculty, thus delivery, installation and so forth of the equipment to be procured might require additional time and labor. It is therefore essential that the delivery schedule and delivery route, place of storage, procedure of installation, and so forth be discussed in detail with the Ministry of Health and the Hospital beforehand.

3-1-3 Division of the Implementation

Division of the implementation of the Project by the Recipient Country and Japan shall be as follows:

(1) Works to be carried out by the Recipient Country

- Securing of spaces required for the installation of large equipment by the removal of existing old equipment for and works of associated facilities.
- Works to supply water, drainage, and electricity to be required for the operation of the equipment to be procured up to the designated points of connection.
- Securing of storage space for the equipment to be procured until the time of installation.
- Bearing of all required expenses other than those to be covered by the Grant Aid.

(2) Works to be covered by the Grant Aid

- Procurement of medical equipment
- Transport of medical equipment to each medical institution within the city of Skopje
- Delivery, guidance of installation, and trial run of medical equipment
- Explanation of operation, method of maintenance of medical equipment

3-1-4 Plan for Supervising Implementation

The Consulting Corporation of Japanese nationals shall provide fair guidance, advice, and coordination throughout the design phase, tendering phase, and implementation phase of the project and shall carry out whatever is required "in order to ensure smooth implementation of the project in accordance with the Grant Aid Scheme of the Japanese Government and based on "the Basic Design Survey Report".

(1) Details of Implementation Supervision

1) Design phase

Preparation of implementation design documents, preparation for tendering, preparation of contract documents.

2) Tendering phase

Examination of potential bidders, implementation of tendering, evaluations of tender details, conclusion of contract.

3) Implementation phase

Report of the state of progress of implementation supervision (inspection/approval of equipment specifications, inspection/approval of equipment, shipment, supervision of ocean transportation, inland transportation, guidance/supervision of installation, supervision of works to be carried out by the counterpart), issue of certificates, and so forth.

4) Completion of works

The Consultant is deemed to have completed its works by having completed installation of the equipment, having confirmed that all conditions of the contract have been met, having witnessed the delivery of the equipment, and having obtained approval of the Recipient Country.

(2) Manpower plan

Manpower of the Consultant required for the implementation design/implementation supervision shall be as follows:

1) Project Manager ..... One (1)

The superintendent shall be responsible for the comprehensive supervision of works as a whole.

2) Equipment Planner (I) ..... One (1)

The person shall be responsible for the analysis and preparation of specifications.

He shall be in charge of confirming on-site facilities and supplementary matters during the Basic Design Study.

3) Equipment Planner (II) ..... One (1)

The person shall be responsible for the analysis and preparation of specifications.

He shall be in charge of the explanation of works to be shared by the Recipient Country and guidance thereof.

4) Equipment Planner (III) ..... One (1)

The person shall be responsible for the inspection as seen from the viewpoint of a medical doctor of the equipment as a whole planned under the project.

He shall provide technical guidance whenever necessary.

5) Cost Planner ..... One (1)

The person shall be responsible for the computation of the detailed project cost.

3-1-5 Procurement Plan

(1) Equipment vendors shall be determined by way of Open Tendering participated by corporations of Japanese nationals. The successful tenderer shall be determined by the lowest price submitted among all tenderers which have met provisions and conditions of the tender documents and the conditions to tender. The contract shall be a lump sum contract in accordance with the conditions set forth in the tender documents. The contract shall cover everything concerning supply, manufacture, delivery and installation of the equipment, guidance of the adjustment/trial run thereof as well as technical guidance concerning maintenance and repair thereof.

(2) Procurement of the equipment

Procurement of the equipment under the Project shall be made within Japan in principle, while a certain items of equipment which would require regular maintenance may be procured from other sources as detailed in item (3) hereunder.

(3) Procurement from third countries

Procurement of medical equipment in the Recipient Country is mostly from foreign countries. Accordingly, a procurement plan of the medical equipment shall prefer procurement of the type of equipment available either from manufacturers that operate through agents capable of providing technical services (repair and maintenance services), and located either in the Recipient Country or neighboring states or from those vendors that operate through agents capable of carrying a sufficient stockpile of spare parts/consumables. Special care should be taken for the following equipment.

Universal Angiography System

This equipment would require regular periodic inspection 3 times a year after delivery. As there is no other hospital that possesses equivalent equipment, technical trouble of the equipment would cause a serious life-threatening situation. Availability of prompt repair service would therefore be mandatory. Accordingly, a type of equipment that satisfies the following requirements, which will be clearly indicated in the technical specifications of the tender document, would be preferable:

1) The manufacturer operates through an agent located within the city of Skopje.
2) The agent of the manufacturer has several engineers/technicians capable of providing repair and maintenance services, and is capable of concluding a repair and maintenance service contract for the equipment with the Hospital.
3) The agent has to be capable of providing the required repair and maintenance services within 48 hours, should a failure occur on the subject equipment.
4) In principle, the agent must have a stockpile of spare parts/consumables classified as general purpose items. Also, the agent must be capable of procuring special parts within 3 days.

The procurement of the equipment from third countries' manufacturers (OECD member countries) capable of providing the above-mentioned services would be allowed.

5) The frequency of annual periodic inspections shall be no less than 3 times and the cost of annual maintenance and repair services including the cost of dispatching engineers must be clearly indicated.

Other equipment equivalent to the performance of the equipment procured from Japan, being less expensive, and being well supported by prompt maintenance and repair technical services and with spare parts/consumables promptly available may be procured from the third countries (OECD member countries).

(4) Inland transportation route

The recipient Country is currently landlocked. Possible inland routes of transportation for the equipment to be procured have been confirmed to be the following:

1) The route through the Black Sea and via the Port of Varna/Bulgas, Bulgaria
2) The route through the Adriatic Sea and via the Port of Durece, Albania
3) The route via Germany/Hungary/Romania/Bulgaria
4) The route through the Aegean Sea and via the port of Thessaloniki, Greece
5) Air Cargo leading directly into Macedonia

Route 2) is not suitable for inland transportation in view of unfavorable conditions of roads, bridges, and port facilities. There is a possibility that Route 4) will be available for the transport, since normalization between the Recipient Country and Greece advanced in New York recently. This situation should be fully taken into consideration in the selection of a transportation route. Although route 5) is assured and the quickest, the cost of transport would be too high to be justified. Therefore, it is concluded that the only options available would be either through route 1) or through route 3) at this moment.

Because most of the equipment to be procured consists of precision instruments and would require measures to prevent the ingress of moisture, and it would be hauled over long inland distances, special packing methods shall be designated in order to ensure that proper care is taken.

On the other hand, a treaty is already effective between the Recipient Country and Bulgaria with regard to the transport of humanitarian aid materials which that has allows provisions for the preferential processing of unloading and customs clearance at the port of Bulgas/Varna, of inland transportation, and of border crossing. Also, the system for receipt on the part of the Recipient Country is expected to provide the required conveniences by a special order of the Minister in charge of the Aid Coordination as soon as the Grant Aid Scheme has been approved.

Length of time required for transport will be:
From Japan to the Port of Varna/Bulgas ..... about 45 - 50 days
From the Port of Varna/Bulgas to Skopje ..... about 7 - 8 days
From Germany to Skopje via inland route ..... about 5 - 8 days.

3-1-6 Implementation Schedule

The implementation schedule to materialize the project go through the following procedures beginning with Exchange of Notes (E/N) through the tendering for the equipment, and up to the completion of delivery. At any phase of the project, the Ministry of Health, the Consultant, Vendors of equipment, and any other parties concerned would have to agree to cooperate closely with each other and to take whatever actions are required in order to implement the Project smoothly as possible.

1) Signing of "Exchange of Notes (E/N)" between the governments of the Recipient Country and Japan.
2) Banking Arrangements (B/A)
   "Banking Arrangements (B/A)" between the government of the Recipient Country or its designated authority and a foreign exchange bank in Japan.
3) Conclusion
   Conclusion of a contract with a Japanese Consulting Firm concerning the procurement of products and services.

4) Verification

Verification of contract by the Government of Japan.

5) Authorization to Pay

Issuance of "Authorization to Pay" by the government of the Recipient Country or its designated authority.

6) Detailed Design and Tender documents

Preparation of detailed design and tender documents by the Consultant. Approval of tender documents by the Ministry of Health/Preparation for tendering by the Consultant/ Implementation of tendering and evaluation of tender documents

7) Lump sum contract

Conclusion of the purchase agreement by and between the Ministry of Health and Vendors

8) Verification

Verification of contract by the Government of Japan.

9) Authorization to Pay

Issuance of "Authorization to Pay" by the government of the Recipient Country or its designated authority.

10) Approval of manufacturing drawings/working drawings of equipment

Examination/approval/indication of required instructions to the specifications for the equipment and submitted by vendors, close communications shall be maintained with the Hospital so that required coordination is ensured to prevent troubles arising in regard to the implementation of the project.

11) Witness test of equipment

The Consultant shall witness, as needed from time to time, factory tests of equipment prior to their shipment thereof and shall approve the test results obtained for and on behalf of the Ministry of Health.

12) Supervision of implementation

The consultant shall execute inspection/approval of specification of the equipment and so forth, test/approval of equipment, supervision of shipment, ocean transportation, inland transportation, guidance/supervision of installation, supervision of works to be shared by the Recipient Country in accordance with the provisions of consultation contract.

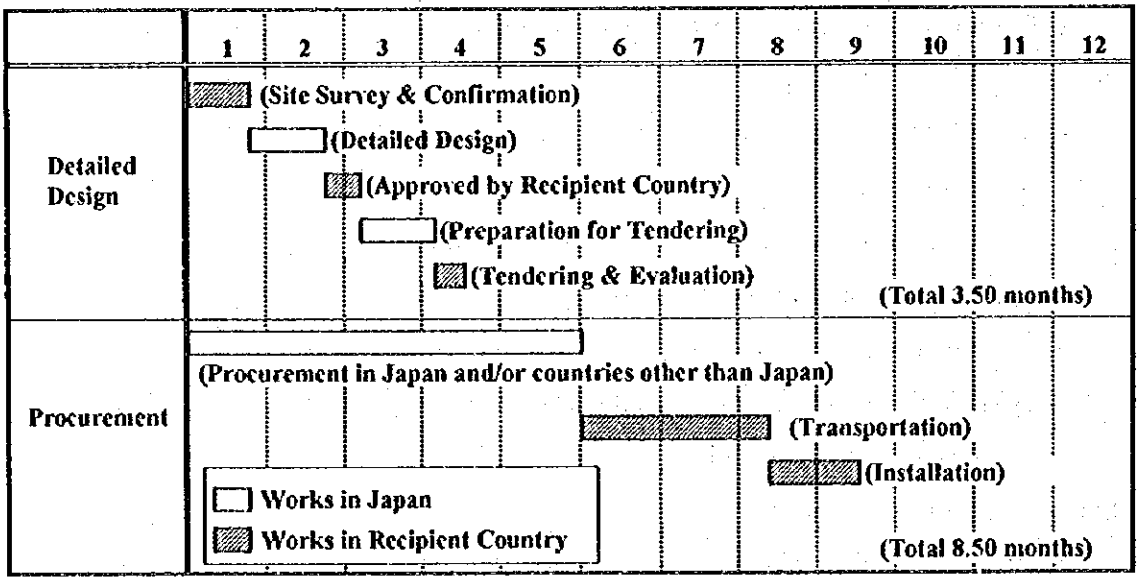
13) Control of implementation schedule

The consultant shall control the project implementation schedule so that equipment procurement agreement will be completed within the period clearly specified in the Exchange of Notes and shall issue instructions as needed from time to time to vendors of equipment.

14) Tests on completion and trial run

The Consultant shall carry out tests on completion and trial run of equipment and shall confirm that the performance levels specified in the specifications are guaranteed and shall submit to the Ministry of Health a report of the completion of all tests. The implementation schedule shall be as per the table hereunder.

Figure 3-1-1 Project Implementation Schedule



3-1-7 Obligations of the Recipient Country

The Recipient Country shall implement the following in accordance with the Exchange of Notes (E/N) in order to implement the Project:

1) To provide facilities for the distribution of electricity, water supply and drainage, and other incidental facilities outside the site;
2) To ensure prompt unloading and customs clearance at ports of disembarkation in the Recipient Country and internal transportation therein of the products purchased under the Grant Aid Scheme;
3) To exempt Japanese nationals from customs duties, internal taxes, and other fiscal levies that may be imposed in the Recipient Country with respect to the supply of products and services under the Verified contracts;
4) To accord Japanese nationals whose services may be required in connection with the supply of products and services under the Verified Contracts such facilities as may be necessary for their entry into the Recipient Country and stay therein for the performance of their work;
5) To ensure that the equipment under the Grant Aid Scheme be maintained and used properly and effectively for the Project.

3-2 Operation and Maintenance Plan

The plan of the Project is to procure medical equipment, with the space for their installation already secured complete with such basic facilities as power supply, water supply and drainage, and so forth. However, installation of the Universal Angiography System, The Remote Control Fluoroscope-Radiography System, and the General Radiographic X-ray System for the Hospital will require certain modifications to the rooms reserved for the installation of this equipment. Costs required for the modifications have been estimated as follows:

<u>Costs to be shared by the Recipient Country</u>

Works to modify building walls, ceilings, and electricity of Institute of Radiology- Total : 407 thousands denars

	(in denar)
1) Room 1 (See Figure 2-3-1)	
Repairment of wall	95,340
Material	39,200
Labor	47,740
Repairment of Ceiling	74,690
Material	48,015
Labor	26,675
Electricity Work	72,080
Material	52,880
Labor	57,680
Total	242,110
2) Room 2 (See Figure 2-3-1)	
Repairment of Ceiling	45,430
Material	29,205
Labor	16,225
Electricity Work	37,200
Material	26,400
Labor	10,800
Total	82,630
3)Room 3 (See Figure 2-3-1)	
Repairement of Ceiling	44,823
Material	28,750
Labor	16,073
Electricity Work	37,200
Material	26,400
Labor	1,800
Total	82,023
Grand Total	406,763

Chapter 4

Project Evaluation and Recommendations

Chapter 4 Project Evaluation and Recommendations

4-1 Evidence and Examination for Applicability, and Beneficial Effects

4-1-1 Beneficial Effects

The following beneficial effects are expected by the implementation of the Project.

The beneficial effects are evaluated in terms of the number of benefited patients, qualitative upgrading of medical service, economy, and upgrading of technology, as the focal points of the issue.

(1) As the tertiary medical care under the referral system, it would be possible to provide appropriate diagnosis/treatment to seriously ill patients.

The Hospital is classified as a tertiary medical institution. Currently, the number of inpatients who have been referred by primary and secondary medical care totals not less than 48,000 per year (outpatients 344,000 per year). While the level of medical doctors working in the Hospital is considered high enough to be internationally acceptable, the medical equipment as a whole is becoming obsolete, with the quality level of its performance being not as high as desired, and with the types of medical equipment available being limited, thus not all needs of patients can be fully met. Each medical care institution was visited for the research during the Basic Design Study conducted this time, and it was often voiced by medical doctors interviewed that they felt very sorry to admit that more appropriate diagnosis and treatment should have been possible and that many human lives could have been saved, if they had had access to medical equipment of higher quality. A trend of increases of cases of vascular tract diseases, cancers, and malignant tumors is recognized in the Recipient Country and the overall structure of diseases is in a process of change. Unfortunately, the medical equipment currently available is powerless to deal with such a change in the structure of diseases, and prompt actions to rectify the situation are desperately awaited by patients with such diseases.

Should advanced diagnostic and treatment equipment be introduced into major medical institutions by the program to improve the medical quality of equipment under the Grant Aid Cooperation Program of the Japanese Government, as is currently contemplated, no

less than 1,500 seriously ill patients will be provided with prompt and appropriate medical services resulting in a significantly strong impact to improve the level of health care services to be provided.

(2) By the renewal of obsolete medical equipment, the level of health care services to be provided is expected to improve, thus contributing to upgrading of the level of medical science as a whole in the Recipient Country.

Medical equipment of the Hospital is, on average, well over 10 years old, with one-fifth of the equipment unusable. Accordingly, every medical care institution is finding it difficult to provide appropriate diagnosis and treatment services. For example, the Institute of Radiography is equipped with aged X-ray radiography equipment of low performance and therefore it is unable to provide appropriate diagnosis, and further, patients are obliged to wait for more than 3 months for diagnosis and treatments. Also, in the Surgical Hospital, anesthesia equipment has failed, and the miserable situation prevails in which anesthesia equipment has to be operated manually during surgical operations.

Should the major medical equipment be procured in full under the Grant Aid Scheme this time, it is expected that the miserable situation of diagnosis and treatments currently prevailing in the Recipient Country will be improved, at least partially.

(3) It would be possible to diagnose and treat domestically those patients who are currently treated in other countries, thus contributing to the elimination of national economic losses.

In the Recipient Country, about 650 patients are obliged to travel to Germany, Russia, UK (pediatrics), USA (cardiology), France (cancer), and other countries to be diagnosed and treated, mainly due to the lack of equipment for appropriate diagnosis and treatment services within the Recipient Country. While 20% of fees thereof may be covered by medical insurances, its amount is no less than US$ 4 million annually.

Should a Universal Angiography System and any other equipment be procured through the Project, then, those patients so far obliged to travel in other countries for appropriate diagnosis and treatment would be provided with opportunities of appropriate diagnosis and treatment available within the Recipient Country.

(4) By introduction of the latest medical equipment, contribution to the upgrading of medical education as well as to upgrading of the level of medical care available would be expected to materialize.

The Hospital is without doubt playing an important role as the sole medical education institution. Similar to the situation in Japan, admission into its Medical Faculty is a difficult hurdle to overcome. Although the quality of students is rather high, medical equipment available for medical education is obsolete and often unusable, and thus it is pointed out that those students have abundant textbook knowledge but poor practical experience.

Should the medical equipment procured under the Grant Aid Cooperation Scheme, in order to renew the existing aged ones, begin to operate, they would not only serve to upgrade the level of medical education but also significantly contribute to the upgrading of the level of health care services in the future.

4-1-2 Evidence and Examination for Applicability

The Project is a plan primarily to reinforce the existing and obsolete medical equipment of the Hospital and the Surgical Hospital. Objectives of this project are:

1) On the short-term basis, to renew existing obsolete medical equipment in order to secure the latest ones as needed for the provision of appropriate treatments, and
2) On the long-term basis, to improve the quality of treatments provided to patients.

During the study conducted this time, the Study Team visited each clinic and institute with regard to overall requested equipment. Persons in charge, including medical doctors, were interviewed in order to collect information concerning requested equipment directly from those working at the first line of medical care. Consequently, it was concluded that the

implementation of the project is justifiable because:

1) The equipment that has been requested consists of items that are for diagnosis and treatment of patients, and that are given a high order of priority by the Recipient Country,
2) Most of the existing equipment is considerably aged and obsolete. Much of it is no longer suited for daily use and needs to be renewed urgently,
3) Spaces for installation, personnel, and the level of technique needed for operation and maintenance of the equipment to be replaced are readily available in abundance, and
4) A minimum necessary amount of budget has already been estimated to allow operation of such medical equipment.

4-2 Recommendations

(1) Recommendations concerning the consideration of organization

1) Centralized consolidation of functions

The Ministry of Health is planning to reorganize and unify medical care as a whole into a consolidated central hospital system, in order to ensure stabilized management of hospital services, through a review of the organization and manpower of each clinic and institute under the control of the Hospital, reallocation of medical equipment, and a review of the accounting department in accordance with the national policy of the Recipient Country to shift to a market-oriented economy. Medical equipment has been, in general, significantly upgraded during recent years by the extensive introduction of electronics technology, in order to contribute to the upgrading of health care services to be provided. Since equipment has been becoming more and more expensive, it is no longer easily justifiable from an economic point of view to introduce such medical equipment into every individual medical care institution even in Japan. Efforts in the past to introduce such medical equipment into every individual medical care institution in Japan have been reviewed for correction. As the result, a system to centrally consolidate expensive items of medical equipment has been established during the past several decades, so that a centralized clinical diagnostic department, a centralized test department, and a centralized surgical operation department have been organized in large-scale hospitals, under the direct supervision and control of the hospital director, to allow access to the services by all

clinics.

More recently, a new system to appropriately relocate, regionally, expensive items of medical equipment, to centrally consolidate them instead of locating them in the unit hospital, is being studied in earnest, and the system has already been implemented in certain regions. The Hospital is requested to study regional and centralized relocation of expensive medical equipment, in order to provide centralized medical care that would serve to upgrade the level of regional medical care as a whole. Management of modern hospitals equipped with expensive items of medical equipment has been proved to be very expensive, and without reasonable reallocation of manpower, medical equipment, and efficient operation, it would no longer be possible to stabilize management of those hospitals.

From this point of view, the efforts of the Ministry of Health to convert the Hospital into a centrally consolidated hospital are highly appreciated, and further efforts of the Ministry of Health to implement this project are desired.

2) Effect of introduction of expensive medical equipment

The amount of the increase of return to be gained in the case of introducing 5 major items of expensive equipment under the Grant Aid Cooperation Scheme of Japan is expected to be, as summarized in **Table 2-4-7**, 42.9 million denars in FY 1996, when such equipment will be introduced, and 53.7 million denars per year, on average, during five years to follow thereafter.

3) Centrally unified control of information

Some clinics and institutes of the Hospital separately collect information, concerning the case histories of patients, and medical prescription, and so forth, by personal computers. Collected information, however, is considered insufficient for use as the basic data of hospital management. Also, no efforts are being made to improve efficiency through the introduction of information processing equipment in every clinic and institute of the Hospital. Under the situation in which basic information so collected is not considered sufficient, stockpiling of pharmaceuticals and consumables, and accounting of revenue and expenditure of the Hospital, cannot be controlled

efficiently and effectively.

In addition, in implementing, with a view to the Hospital as a whole, optimized distribution of pharmaceuticals and consumables, common use of medical equipment, review of organization and manpower, and reallocation of medical equipment, it would be essential to structure a network control system to cover the Hospital as a whole, so that the current status of each clinic and laboratory can be comprehended, and to centrally control information. It would be necessary to establish an environment under which information of the Hospital as a whole is controlled through such steps as: i) Introduction of information processing equipment into every clinic and institute of the Hospital; ii) Collection of basic information (Number of patients on daily and monthly bases, financial and accounting status, information concerning stockpiling of pharmaceuticals and consumables and so forth); iii) Centrally unified control of information concerning the Hospital by structuring a small-scale LAN (Local Area Network); and iv) Effective and efficient management and control by the centralized control of collected information, and so forth.

4) Financial plan and funding plan of the Hospital

As a result of the study detailed in section **2-4-3**, which was conducted in order to enable long-term projection of the management of the Hospital, the return of the Hospital would increase year after year by the beneficial effect of introducing the medical equipment, thus improving the balance and funding position to the point of passing a breakeven point in FY 2002. It is expected that compensation of the deficit by subsidy from the national treasury would become unnecessary from FY 2002 and onward; thus the balance will turn to the plus side, to allow sound and healthy management of the Hospital.

(2) Recommendations concerning the consideration of environment control

1) Control of medical waste/toxic materials from medical care services

With regard to the medical waste from the Hospital, the current level of control in general, such as classified collection and removal of infectious waste, is considered appropriate, while no disposal by incineration is carried out throughout the process of removal from the Hospital and ending with final disposal.

According to the explanation provided by the clinical center, infectious waste is finally disposed of, similarly to the domestic waste from the city of Skopje, by land reclamation within a final disposal yard. It is therefore recommendable that the Hospital, as the top-ranking medical care institution, should improve the following.

a) Installation of an incinerator (small-scale of 50-100 kg capacity, to begin with) for waste disposal within either the hospital site or the municipal treatment yard.
b) Centralized disposal by the clinical center of waste from medical care services practiced by other medical care institutions
c) Thorough collection and thorough labeling of dangerous substance (pathogenic, infectious, and toxic chemical substances)
d) Establishment and implementation of an education and training program to ensure safety of those involved in waste disposal service and those involved in medical services
e) Confirmation of the responsibility to be carried by the person in charge of waste handling

4-3 Technical Cooperation/Cooperation with Other Donors

Most of the medical equipment to be procured in the Hospital under the Project is intended to replace and renew existing and obsolete equipment. Therefore sufficient technique to operate them is considered readily available, and in this regard no technical cooperation may be necessary. However, medical equipment continues to advance rapidly. Apart from the implementation of the Grant Aid Cooperation Scheme with a technical cooperation, with acceptance of trainees for education and training for high technology equipment and, the medical equipment to be procured might be used more effectively. Among others, an

angiography system for cardiology is already installed and operating in the Hospital. This system is only for cardiological diagnosis, and the system to be procured under the Project is for universal applications. It is therefore considered desirable to provide a short-term technical guidance program, in addition to the technology transfer during its installation, in order to ensure that the system will be used effectively and efficiently.

On the other hand, small medical equipment, spare parts thereof, pharmaceuticals, consumables, and so on are being provided to the Recipient Country not only by international organizations, but also by the EU, U.K., Germany, and so on. Those aid materials are expected to be used together with the medical equipment to be procured under the Project, and exploration of the possibility of information exchange and cooperation with those donor countries at every possible opportunity is considered necessary.

Appendices

Appendices-1 Member List of the Survey Team

(1) Field Survey

Mr. Ken'ichi KIMIYA	Leader	Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs
Mr. Yuji TAKASAKI, MD. Ph.D.	Technical Adviser	Tokai University School of Health Science
Mr. Keiji IIMURA	Project Manager	CRC Overseas Cooperation Inc.
Prof. Shoji MATSUOKA, MD. Ph.D.	Equipment Planner	CRC Overseas Cooperation Inc.
Mr. Masahiro NAKATANI	Facilities Planner	CRC Overseas Cooperation Inc.
Mr. Yoshiharu HIGUCHI	Cost Planner	CRC Overseas Cooperation Inc.

(2) Explanation of Draft Report

Mr. Daini TSUKAHARA	Leader	Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs
Mr. Michio TSUDA, MD, Ph.D	Technical Adviser	Department of Biochemistry School of Medicine Tokai University
Mr. Keiji IIMURA	Project Manager	CRC Overseas Cooperation Inc.
Mr. Yoshiharu HIGUCHI	Equipment Planner	CRC Overseas Cooperation Inc.

Appendices-2 Survey Schedule

(1) Field Survey

No.	Date	Movement	Accommodation	Activities
1	Jul. 9 (Sun.)	Arrive to Vienna	Vienna	
2	Jul. 10 (Mon.)		Vienna	Courtesy call on the Embassy of Japan and JICA office
3	Jul. 11 (Tue.)	Arrive to Skopje	Skopje	Courtesy call on the Consulate-General of Japan
4	Jul. 12 (Wed.)		Skopje	Courtesy call on the Ministry of Foreign Affairs, the Ministry of Health Kick off meeting at the Ministry of Health (Explanation of contents and tentative schedule of the Study) Survey of the Institute of Radiology
5	Jul. 13 (Thu.)		Skopje	Courtesy call on the Minister of Science Survey of the Clinic of Hematology, Clinic of Infectious Disease, Clinic of Pediatrics
6	Jul. 14 (Fri.)		Skopje	Survey of the Institute of Radiology, Clinic of Nephrology Discuss about the contents to be described in the minutes Survey for Agent
7	Jul. 15 (Sat.)		Skopje	Data Collection
8	Jul. 16 (Sun.)		Skopje	Survey of the conditions of roads
9	Jul. 17 (Mon.)			Discussion at the Ministry of Health Survey of the Clinic of Cardiology, Clinic of Opthalmology Clinic of Otorhinolaryngology
10	Jul. 18 (Tue.)			Discussion at the Ministry of Health Survey of the Clinic of Nephrology, Institute of Clinical Biochemistry
11	Jul. 19 (Wed.)			Discussion at the Ministry of Health Survey of the Institute of Blood Transfusion, Skopje Surgical Hospital, Clinic of Neuropsychiatry
12	Jul. 20 (Thu.)			Discussion at the Ministry of Health Survey of the Clinic of Gynecology and Obstetrics, Institute of Children Respiratory Disease

13	Jul. 21 (Fri.)			Discussion at the Ministry of Health Survey of the Clinic of Orthopedics, Clinic of Gynecology and Obstetrics Institute of Radiotherapy and Oncology Clinic of Endocrinology Institute of Phathophysiology
14	Jul. 22 (Sat.)			Data Collection
15	Jul. 23 (Sun.)	Arrive to Vienna*	Vienna*	
			Skopje	Data Collection
16	Jul. 24 (Mon.)		Vienna*	Visit the Embassy of Japan and JICA office*
			Skopje	Discussion at the Ministry of Health Survey of the Institute of Clinical Biochemistry, Clinic of Hematology
17	Jul. 25 (Tue.)	Arrive to Skopje*	Skopje	Survey of the Skopje Surgical Hospital, Clinic of Cardiology, Clinic of Gastroenterohepatology
18	Jul. 26 (Wed.)		Skopje	Courtesy call on the Ministry of Health (Explanation of the Japan's grant aid system) Survey of the Clinic of Otorhinolaryngology, Institute of Radiology, Clinic of Cardiology
19	Jul. 27 (Thu.)		Skopje	Discussion at the Ministry of Health Survey of the Skopje Surgical Hospital Institute of Children Respiratory Disease
20	Jul. 28 (Fri.)		Skopje	Discussion at the Ministry of Health (Discuss about the contents to be described in the minutes) Survey of the Institute of Radiology
21	Jul. 29 (Sat.)		Skopje	Data Collection
		Arrive to Frankfurt	Dusseldorf	
22	Jul. 30 (Sun.)			Meeting with the survey team
			Dusseldorf	Survey for Agent
23	Jul. 31 (Mon.)		Skopje	Signing of the Minutes at the Ministry of Health
			Dusseldorf	Survey for Agent
24	Aug. 1 (Tue.)	Arrive to Vienna*	Vienna*	Official Team leave for Vienna*
		Arrive to Frankfurt	Frankfurt	Consultants stayed in Frankfurt
			Dusseldorf	Survey for Agent
25	Aug. 2 (Wed.)		Vienna*	Visit the Embassy of Japan and JICA office

				(Report on the field survey in The former Yugoslav Republic of Macedonia)*
			Frankfurt	Survey for Agent
			Dussefdorf	Survey for Agent
26	Aug. 3 (Thu.)	Leave for Tokyo		
27	Aug. 4 (Fri.)	Arrive to Tokyo		

*Official Team

(2) Explanation of Draft Report

No.	Date	Movement	Accommodation	Activities
1	Sep. 3 (Sun.)	Arrive to Frankfurt	Frankfurt	
2	Sep. 4 (Mon.)	Arrive to Skopje	Skopje	
3	Sep. 5 (Tue.)		Skopje	Courtesy call on the Ministry of Foreign Affairs, the Ministry of Health
4	Sep. 6 (Wed.)		Skopje	Meeting at the Ministry of Health Survey of the Skopje University Hospital
5	Sep. 7 (Thu.)		Skopje	Discuss about the contents to be described in the minutes at the Ministry of Health Survey of the Skopje University Hospital
6	Sep. 8 (Fri.)		Skopje	Survey of the clinics in the south district of Macedonia* Survey of the Skopje University Hospital
7	Sep. 9 (Sat.)		Skopje	Visit the Ministry of Health
8	Sep. 10 (Sun.)		Skopje	Survey of the condition of roads (Skopje - Greek border)
9	Sep. 11 (Mon.)	Arrive to Vienna*	Vienna* Skopje	Signing of the Minutes Official Team leave for Vienna* Discussion at the Ministry of Health
10	Sep. 12 (Tue.)	Leave for Japan*	Skopje	Visit the Embassy of Japan and JICA office* Discussion at the Ministry of Health and the Skopje University Hospital
11	Sep. 13 (Wed.)	Arrive to Japan*	Skopje	Discussion at the Ministry of Health and the Skopje University Hospital
12	Sep. 14 (Thu.)	.	Skopje	Discussion at the Ministry of Health and the Skopje University Hospital

13	Sep. 15 (Fri.)		Skopje	Discussion at the Ministry of Health Survey of the conditions of roads (Skopje-Bulgaria border)
14	Sep. 16 (Sat.)	Arrive to Sophia	Sophia	Move to Sophia
15	Sep. 17 (Sun.)		Sophia	Survey of the conditions of roads (Sophia-Varna port)
16	Sep. 18 (Mon.)	Arrive to Frankfurt	Frankfurt	Move to Frankfurt
17	Sep. 19 (Tue.)	Leave for Japan		Supplementary Survey for Agent
18	Sep. 20 (Wed.)	Arrive to Tokyo		

*Official Team

Appendices-3 List of Party Concerned in the Recipient Country

Affiliation	Position & Specification	Name
Ministry of Health	Minister	Dr. Ilija Filipce
	Undersecretary	Dr. Violeta Malinska Petrusevska
	Undersecretary	Dr. Ilija Petrusevski
	Adviser to Minister	Dr. Liljana Ivanovska
	Adviser to Minister	Dr. Zarko Sutinovski
	Assistant to Minister	Mr. Jordan Misevski
	Director of Health Insurance Fund	Mr. Borce Naumovski
	Financial Commercial and Economical Dept.	Mr. Jordan Dimovski
	Assistant	Dr. Mihail Levenski
	Advisor	Dr. Donna Maneva
Ministry of Foreign Affairs	Head of Far East Dept.	Mr. Kurme Evtimovski
	Desk Officer	Mr. Norotni Alexander
Ministry of Finance	Advisor	Ms. Biljana Milosevska
	Chief Head of the Department	Ms. Tagasovska Lenche
Ministry of Science	Minister Aid Coordinator	Dr. Sofija Todorova
	Advisor	Ms. Georgievska Zrezda
	Director	Ms. Argelovska Vera
Ministry of Development	Advisor	Ms. Sasha Shindiloski
	Advisor	Mr. Alexandar Radevski
Consulate General of Japan	Honorary Consul	Dr. Kosta Balabanov
Faculty of Medicine Skopje University	Dean	Dr. Ljubisa T. Caparoski
Clinic of Hematology	Assoc. Prof.	Dr. Nikola Siljanovski
	Senior Assistant	Dr. Oliver Karafilski
Clinic of Infectious Diseases	Director	Dr. Dimitar Dimitriev
Clinic of Pediatrics	Prof., Director	Dr. Nikola Sofijanov
Institute of Radiology	Prof., Head of X-ray Dept.	Dr. Vrcakovski Miodrag
Clinic of Nephrology	Prof., Director	Dr. Polenakovich
Clinic of Cardiology	Prof., Director	Dr. Lazar Lazarov
	Prof., Head of the Dept. of Invasive and Internal Cardiology	Dr. Borce Petrovski
	Assoc. Prof., The Chief of Dept.	Dr. Bozidar Gavrilovski
Clinic of Ophthalmology	Director	Dr. Elena Dajkova
	Assistant	Mr. Jordanova Vesna
	Assistant	Mr. Arnaudofski Zlatio

Affiliation	Position & Specification	Name
Clinic of Otorhinolaryngology	Prof., Director	Dr. Stevo Caparoski
	Prof., Head of Dept.	Dr. VladimirKaev
Clinic of Gastroenterohepatology	Prof., Head of the Clinic	Dr. Vladislav Bidikov
Institute of Clinical Biochemistry	Sr. Researcher	Ms. Sabolic Snezana
		Dr. Sonja Trojacanec
Institute of Blood Transfusion	Director	Dr. B. Trajkovski
	Prof.	Dr. I. Dejanov
	Dept. Director	Dr. V. Milenkov
Skopje Surgical Hospital		Dr. B. Dimitrovski
Clinic of Neuropsycheatry	Prof.	Dr. Vera Petrova
	Engineer	Mr. Zivko Daskacovski
Clinic of Pulmoallergology	Prof.	Dr. Lube Gligorovski
	Prof.	Dr. Gorcev Angjelko
Clinic of Gynecology & Obstetrics	Prof.	Dr. Kiril Demerdziev
		Mr. Iasina Poplararova
Children's Respiratory Hospital	Prof.	Dr. Predrag Trendafilovski
Clinic of Orthopedics	Prof.,Director	Mr. Jordan Kamnar
Institute of Radiotherapy & Oncology	Prof., Director	Mr. Nikola Horvatic
	Electric Engineer	Mr. Ljudmil Camilov
Clinic of Endocrinology	Prof., Director	Dr. Kiril Petrovski
Clinic of Pathophysiology and Nuclear Medicine	Prof.	Dr. N. Simova
		Dr. B. Andonovski
Clinic of Hematology	Director	Dr. Bozidar Trajkovski
	Assistant Director	Dr. Vladimir Milenkov
		Dr. Oliver Karanfilski
Clinic of Infection Disease	Director Senior Lecturer	Dr. Dimitar Dimitriev
Clinic of Nephrology	Director	Dr. Momir H. Polenakovic
Clinic of Toxicology	Director	Dr. Branimir Pavlovski

Appendices-4 Minutes of Discussion

РЕПУБЛИКА МАКЕДОНИЈА
МИНИСТЕРСТВО ЗА ЗДРАВСТВО
REPUBLIC OF MACEDONIA
MINISTRY OF HEALTH

July 31, 1995

Mr. Kenichi KIMIYA
Leader
Basic Design Study Team
JICA

Dear Mr. KIMIYA

I have herein acknowledged your letter dated July 31, 1995, and have confirmed the contents of the attachment of the letter.

Sincerely yours

Ilija Filipce
Minister of Health

91 000 Skopje, "Vodnjanska" bb. Tel. N°: 389 91 11 34 29 Fax.N°: 389 91 11 30 14

July 31, 1995

Mr. Ilija Filipce Ph.D.,MD
Minister of Health

Dear Mr. Filipce

I have the honor to refer to our recent discussions regarding the Project for upgrading the Medical Equipment at the Institutes and Clinics of the Faculty of Skopje University and the Skopje Surgical Hospital (hereinafter referred to as "the Project").

In response to the request of the Government of The Former Yugoslav Republic of Macedonia, the Government of Japan has decided to conduct a Basic Design Study on the Project and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Macedonia a study team headed by myself for examining the viability of the Project from July 9 to August 4, 1995.

The team held intensive discussions with the Macedonian officials concerned and also conducted field surveys at the study area with the helpful assistance of the Ministry of Health.

In the course of discussions and field surveys, I believe that the main items described on the attached sheets have been confirmed. The team will proceed to further works and prepare a draft report on the Basic Design Study.

On behalf of all the members of this team, I wish to express my sincere appreciation to the officials concerned of your government for their kind assistance and close cooperation extended to the team.
I hope that the Project will contribute to the enhancement of friendly relations between our two countries.

Yours Sincerely

Kenichi Kimiya

Kenichi KIMIYA
Leader
Basic Design Study Team
JICA

ATTACHMENT

1. Objectives of the Project

The objective of the Project is to improve the quality of medical services at THE INSTITUTES AND CLINICS OF THE MEDICAL FACULTY OF SKOPJE UNIVERSITY and SKOPJE SURGICAL HOSPITAL through provision of essential medical equipment.

2. Project Sites

Institutes and Clinics of the Medical Faculty, Skopje University and Skopje Surgical Hospital.

3. Responsible Ministry and Executing Agency

Responsible Ministry : Ministry of Health,
Executing Agency : Ministry of Health - Department of Hospital Care

4. Items requested by the Recipient Country

After the discussions with the Basic Design Study Team, the following items with the priority were finally requested by the Recipient Country.
The list of requested medical equipment by the recipient country is described in ANNEX-1.

However, the final components of the Project may differ from the above items and priorities, if it is judged necessary after further studies.

5. Comments by the Japanese side on the items in 4. above

The recipient country will take following necessary measures:
- to secure enough budget necessary for proper running and maintenance of the equipment.
- to ensure prompt unloading and custom clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grants.
- to secure the places and facilities for the installation and proper use of the equipment.

The equipment be included in the project is;
- the equipment to be utilized for treatment of the common diseases including diagnostic treatment and prevention.
- the equipment to be replaced with the existing equipment which is already deteriorating.
- the essential equipment for primary health care identified by the World Bank, WHO, UNICEF etc.

While, the equipment be excluded from the Project is;

- the equipment not required for health care services such as diagnosis treatment and prevention,
- the simple equipment/furniture available locally,
- the most advanced equipment to be utilized for research activities,
- the equipment with some difficulties on installation/infrastructure conditions,
- the expensive equipment less utilized because of small number of testing/less number of patients,
- the equipment hazardous to environmental control,
- the equipment only utilized with exclusive reagent kit available from the specific manufacturer, and
- the equipment with financial/marketing difficulties on the procurement of consumable and spare parts etc.

6. Japan's Grant Aid Program

(1) The Government of Recipient Country has understood the system of Japanese Grant Aid explained by the team. (See ANNEX-2)

(2) The Government of Recipient Country will take necessary measures, described in ANNEX-2, for smooth implementation of the Project on condition that the Grant Aid assistance by the Government of Japan is extended to the Project.

7. Schedule of the Study

(1) JICA will prepare a draft report around September 1995.

(2) If the contents of the report is accepted in principle by the Recipient Country, JICA will complete the final report and send it to the Recipient Government by the end of November, 1995.

8. Monitoring of the Project

The Ministry of Health has responsibility for monitoring the progress of all phases of the Project such as allocation of funds, training and maintenance and operation at the Institutes and Clinics of the Medical Faculty of the Skopje University and the Skopje Surgical Hospital.

Medical Equipment List

1. Item No.	2. Health Institution	3. Description of Equipment	4. Q-ty	5. Remarks	6. Priority
1	Institute of Radiology	Universal Angiography	1	P1,P2 N4,N5,N7,N8	A
1	Institute of Radiology	Remote Control Fluoroscope	1	P1,P2,P3 N8	A
1	Institute of Radiology	General Radiographic X-ray System	1	P1,P2,P3 N8	A
1	Institute of Radiology	Universal Color Doppler	1	P1,P3	C
2	Institute of Phathophysiology	Digital Gamma Camera (SPECT)	2	P1,P2 N4,N5,N7,N8	X
3	Institute of Radiotherapy and Oncology	After Loading System (Curie Therapy)	3	P1,P2 N4,N5,N6,N8	X
3	Institute of Radiotherapy and Oncology	Diagnostic Simulator complete with Planning System for Linear Accelerator	4	P1,P2 N4,N5,N6,N8	X
3	Institute of Radiotherapy and Oncology	Linear Accelerator of 4 or 6 MV X-Ray and 5-12 MeV Electrons with Table and Personal Dosimeters including Spare Parts	1	P1,P2 N4,N5,N7,N8	X
4	Clinic of Infectious Disease	Rectosigmoidoscope	1	P1,P3 N8	A
4	Clinic of Infectious Disease	Ultra Sound System	1	P1,P2,P3	A
5	Clinic of Pulmoallergology	Bronchofiberscope	1	P1,P2,P3 N8	A
7	Clinic of Otorhinolaryngology	Micro Motor System for E.N.T.	1	P1,P2,P3	A
7	Clinic of Otorhinolaryngology	Bronchoscope 4mm Diameter, 300mm Long	1	P1,P2,P3 N8	A
7	Clinic of Otorhinolaryngology	Bronchoscope 5mm Diameter, 300mm Long	1	P1,P2,P3 N8	A
7	Clinic of Otorhinolaryngology	Operating Microscope	1	P1,P2,P3	A
7	Clinic of Otorhinolaryngology	Microsurgical Kit for Otomicroscope	1	P1,P2,P3	A
7	Clinic of Otorhinolaryngology	Rhino-Pharyngo-larynofiberscope	1	P1,P2,P3	B
7	Clinic of Otorhinolaryngology	Pendular Computerized Electro Nystagmograph	1	P1,P3	B
7	Clinic of Otorhinolaryngology	Endolaser for ENT	1	P1,P3	A
8	Clinic of Nephrology	Microscope	1	P1,P2,P3	A
9	Clinic of Gynecology and Obstetrics	Phototherapy Unit	2	P1,P2,P3	A
9	Clinic of Gynecology and Obstetrics	Neonathal Infusion Pump	2	P1,P2,P3	A
9	Clinic of Gynecology and Obsterics	ICU	1	P1,P2,P3	A
9	Clinic of Gynecology and Obsterics	NICU	1	P1,P3	A
9	Clinic of Gynecology and Obsterics	Mammographic X-Ray System	1	P1,P3 N8	A
10	Clinic of Pediatrics	ECG 3 Channels	1	P1,P2,P3	A
10	Clinic of Pediatrics	Microscope	1	P1,P2,P3	A

10	Clinic of Pediatrics	Monitor for Intensive Care	2	P1,P2,P3	N7,N8	B
10	Clinic of Pediatrics	Peritoneal Dialisis System Pediatric	1	P1,P2,P3	N7,N8	B
11	Clinic of Hematology	Microscope with Photo Equipment and Imunofluorescent Technics	1	P1,P3	N8	A
11	Clinic of Hematology	Microsceope with Camera & Accessories	1	P1,P2,P3		A
11	Clinic of Hematology	Microscopes	4	P1,P2,P3		A
11	Clinic of Hematology	Spectrophotometer	1	P1,P2,P3		A
11	Clinic of Hematology	ECG 3 Channels	1	P1,P2,P3		A
11	Clinic of Hematology	Coagulometer	1	P1,P3		B
11	Clinic of Hematology	Infusion Pump	1	P1,P3		B
12	Clinic of Opthalmology	Operating Microscope	1	P1,P2,P3		A
12	Clinic of Opthalmology	Aspiration and Irigation Equipment	1	P2		A
13	Clinic of Neuropsychiatry	EEG 16 Channels	1	P1,P2,P3		A
14	Clinic of Cardiology	Defibrilator	1	P1,P2,P3		A
14	Clinic of Cardiology	Temporary Electrostimulator	2	P1,P2,P3	N8	A
14	Clinic of Cardiology	Monitor for Coronary Care	2	P1,P2,P3	N4,N8	B
15	Skopje Surgical Hospital	Anesthetic Equipment	2	P1,P3		A
15	Skopje Surgical Hospital	CO2 Analyser	2	P1,P2,P3	N8	A
15	Skopje Surgical Hospital	Saturation Monitor and Pulseoxymeter	2	P1,P2,P3		A
15	Skopje Surgical Hospital	Choledochoscope	1	P1,P2,P3	N8	A
15	Skopje Surgical Hospital	Gastroscope	1	P1,P2,P3	N8	A
15	Skopje Surgical Hospital	Colonoscope	1	P1,P2,P3	N8	A
15	Skopje Surgical Hospital	Blood Cell Counter M-T 540	1	P1,P2,P3	N8	A
15	Skopje Surgical Hospital	Blood Gas Analyzer	1	P1,P2,P3		A
15	Skopje Surgical Hospital	ICU 4Ch Monitor	2	P1,P2,P3	N4,N8	B
15	Skopje Surgical Hospital	Pulseoxymeter	3	P1,P3		B
16	Institute of Clinical Biochemistry	Biochemical Analyzer	1	P1,P2,P3	N8	A
16	Institute of Clinical Biochemistry	Spectrophotometer Lamda 2	2	P1,P2,P3		A
16	Institute of Clinical Biochemistry	Analyzer for Electrolits	2	P1,P2,P3	N8	A
16	Institute of Clinical Biochemistry	Gas Analyzer (AVL 990 pH)	1	P1,P2,P3	N8	A
16	Institute of Clinical Biochemistry	Laboratory Microscope	4	P1,P2,P3		A
16	Institute of Clinical Biochemistry	Centrifuge	2	P1,P2,P3		A
16	Institute of Clinical Biochemistry	Blood Cell Counter	1	P1,P2,P3	N8	A
16	Institute of Clinical Biochemistry	Ionide Exchange Resin	1	P1,P2,P3		A
16	Institute of Clinical Biochemistry	Densitometer	1	P1,P2,P3		A
16	Institute of Clinical Biochemistry	Microfuge	1	P1,P2,P3		A
17	Institute of Blood Transfusion	Cascade Pump	1	P1,P2,P3		A
17	Institute of Blood Transfusion	Magnet Pump	1	P1,P2,P3		A

17	Institute of Blood Transfusion	pH Meter	1	P1,P2,P3	A
18	Institute of Children Respiratory Disease	Blood Cell Counter	1	P1,P2,P3 N8	A
18	Institute of Children Respiratory Disease	Spectrophotometer	1	P1,P2,P3	A
18	Institute of Children Respiratory Disease	Inhalar	1	P1,P2,P3	A
18	Institute of Children Respiratory Disease	Flexible Bronchoscope	1	P1,P2,P3 N8	A
18	Institute of Children Respiratory Disease	Percutaneous O2	1	P1,P2,P3	A
18	Institute of Children Respiratory Disease	Pulseoxymeter	1	P1,P2,P3	A
19	Clinic Gastroenterohepatology	Color Doppler	1	P1,P3	A
19	Clinic Gastroenterohepatology	Video Endoscope System (Colono and Gastroscope	1	P1,P3	A
19	Clinic Gastroenterohepatology	Duodenoscope with Large Working Channel	1	P1,P2,P3 N8	A
19	Clinic Gastroenterohepatology	Endoscopic Sonography System	1	P1,P3 N8	A
19	Clinic Gastroenterohepatology	Laparoscope Set	1	P1,P3 N8	B
20	Clinic of Orthopedics	Arthrofiberscope System	1	P1,P3	B

A:the equipment be provided in the Project
B:the equipment be provided in case of the budget allowance
X:the equipment be excluded from the Project, however strongly requested by the recipient country

Japan's Grant Aid Scheme

1. Grant Aid Procedures

(1) The 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)
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 Governments of Japan and the recipient country.

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

2. Basic Design Study

(1) Contents of the study

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

1) 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.

2) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme form a technical, social and economic point of view.

3) Confirmation of items agreed on by both parties concerning the basic concept of the Project.

4) Preparation of a basic design of the Project

5) 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 organizations of the recipient country through the Minutes of Discussions.

(2) Selection of Consultants

For 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 firms(s) selected carry(ies) out Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the Study is(are) recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency and also to avoid any undue delay in implementation should the selection process be repeated.

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 supplied 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 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 Notes, concluding contracts with (a) consultant firm(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 whether, 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 a 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 the "Verification".

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

(6) Undertaking requierd of the Government of the Recipient Country.

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

1) To secure land necessary for the sites of the Project and to clear, level and reclaim the land

prior to commencement of the construction.

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 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 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 Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.

РЕПУБЛИКА МАКЕДОНИЈА
МИНИСТЕРСТВО ЗА ЗДРАВСТВО
REPUBLIC OF MACEDONIA
MINISTRY OF HEALTH

September 11, 1995

Mr. Daini TSUKAHARA
Leadèr
Basic Design Study Team
JICA

Dear Mr. Tsukahara,

I have herein acknoweledged your letter dated September 11, 1995, and have confirmed the contents of the attachment of the letter.

Sincerely yours,

Prof.dr. Ilija Filipce
Minister of Health

Dear Dr.Jensen,

I refer to recent correspondence and discussions about opening the WHO Liaison Office at

91 000 Skopje, "Vodnjanska" bb. Tel. №: 389 91 11 34 29 Fax.№: 389 91 11 30 14

September 11, 1995

Mr. Ilija Filipce Ph.D., MD
Minister of Health

Dear Mr. Filipce

I have the honor to refer to our recent discussions regarding the project for upgrading medical equipment (hereinafter referred to as "the Project")

In July 1995, Japan International Cooperation Agency(JICA) dispatched a Basic Design Study team on the Project to the Former Yugoslav Republic of Macedonia (hereinafter referred to as "the Recipient Country"), and through discussions, field survey and technical examination of the results in Japan, JICA has prepared a draft report of the study.

In order to explain and to consult the Macedonian side on the components of the draft report, JICA sent to the Recipient Country a study team, which is headed by myself, and is scheduled to stay in the country from September 3 to 20, 1995.

As a result of discussions, I believe that the main items described on the attached sheets have been confirmed.

On behalf of all the members of this team, I wish to express my sincere appreciation to the officials concerned of your government for their kind assistance and close cooperation extended to the team.

Yours Sincerely

塚原大司

Daini TSUKAHARA
Leader
Basic Design Study Team
JICA

Attachment

1. Components of Draft Report

The Government of the Recipient Country has agreed and accepted in principle the components of the Draft Report proposed by the team.

2. Project Name

Project Name has been agreed as "the project for upgrading medical equipment".

3. Japan's Grant Aid system

(1) The Government of the Recipient Country has understood the system of Japanese Grant Aid explained by the team.

(2) The Government of the Recipient Country are secured team to take the necessary measures described in Annex I for smooth implementation of the Project on condition that the Grant Aid by the Government of Japan is extended to the Project.

4. Further schedule

The team will make the final report in accordance with the confirmed items and send it to the Government of the Recipient Country by the end of October, 1995.

Annex I

Measures to be taken by the Government of the Recipient Country in case Japan's Grant Aid is executed.

1. To provide facilities for distribution of electricity, water supply and drainage and other incidental facilities to the site;

2. To ensure prompt unloading and customs clearance at ports of disembarkation in the recipient country and internal transportation therein of the products purchased under the Grant;

3. 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 contracts;

4. To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such facilities as may be necessary for their entry into the Recipient Country and stay therein for the performance of their work;

5. To ensure that the equipments under the Grant be maintained and used properly and effectively for the Project.

6. To secure enough budget necessary for proper running and maintenance of the equipment.

7. To secure the places and facilities for the installation and proper use of the equipment.

8. To bear commision to the japanese foriegn exchange bank for the banking service based upon the banking arrangement for the Project.

9. To bear all the expenses other than those covered by the Grant necessary for the Project.

Appendices-5 References

1	Macedonia Basic Economic Data	Statistical Office of Macedonia	1995
2	Highlights on the health in the Republic of Macedonia	Ministry of Health	1994
3	Health Care Law	Republic of Macedonia	1994.9
4	Morbidity Registrated in Hospital in Macedonia 1986-1992	Public Health Institute	
5	PROGRAM for Public Sector Investment in The Republic of Macedonia 1995-1998	Republic of Macedonia	1995.6
6	Republic of Macedonia Basic Data	Macedonian Information Centre	1994.12
7	Project on the Possibilities for Reduction of the Perinatal Mortality Rate	Skopje Univ.	
8	Health Sector Transition Project (Draft)	M. O. Health	
9	Electrical Energy Disturbances at the Hospitals in Macedonia	HOPE Project	1995.6

JICA