

MINISTRY OF HEALTH AND MEDICAL INDUSTRY
TURKMENISTAN

BASIC DESIGN STUDY REPORT
ON
THE PROJECT FOR IMPROVEMENT OF
MEDICAL EQUIPMENT
IN
TURKMENISTAN

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MARCH 1997

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
INTERNATIONAL TOTAL ENGINEERING CORPORATION (ITEC)

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PREFACE

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

JICA sent to Turkmenistan a study team from October 13 to November 9, 1996.

The team held discussions with the officials concerned of the Government of Turkmenistan, 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 Turkmenistan in order to discuss a draft basic design, and as this result, the present report was finalized.

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

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

March, 1997



Kimio FUJITA

President

Japan International Cooperation Agency

March, 1997

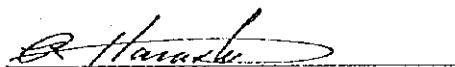
LETTER OF TRANSMITTAL

We are pleased to submit to you the basic design study report on the Project for Improvement of Medical Equipment in the Republic of Turkmenistan.

This study was conducted by International Total Engineering Corporation, under a contract to JICA, during the period from October 3, 1996 to March 31, 1997. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Turkmenistan and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

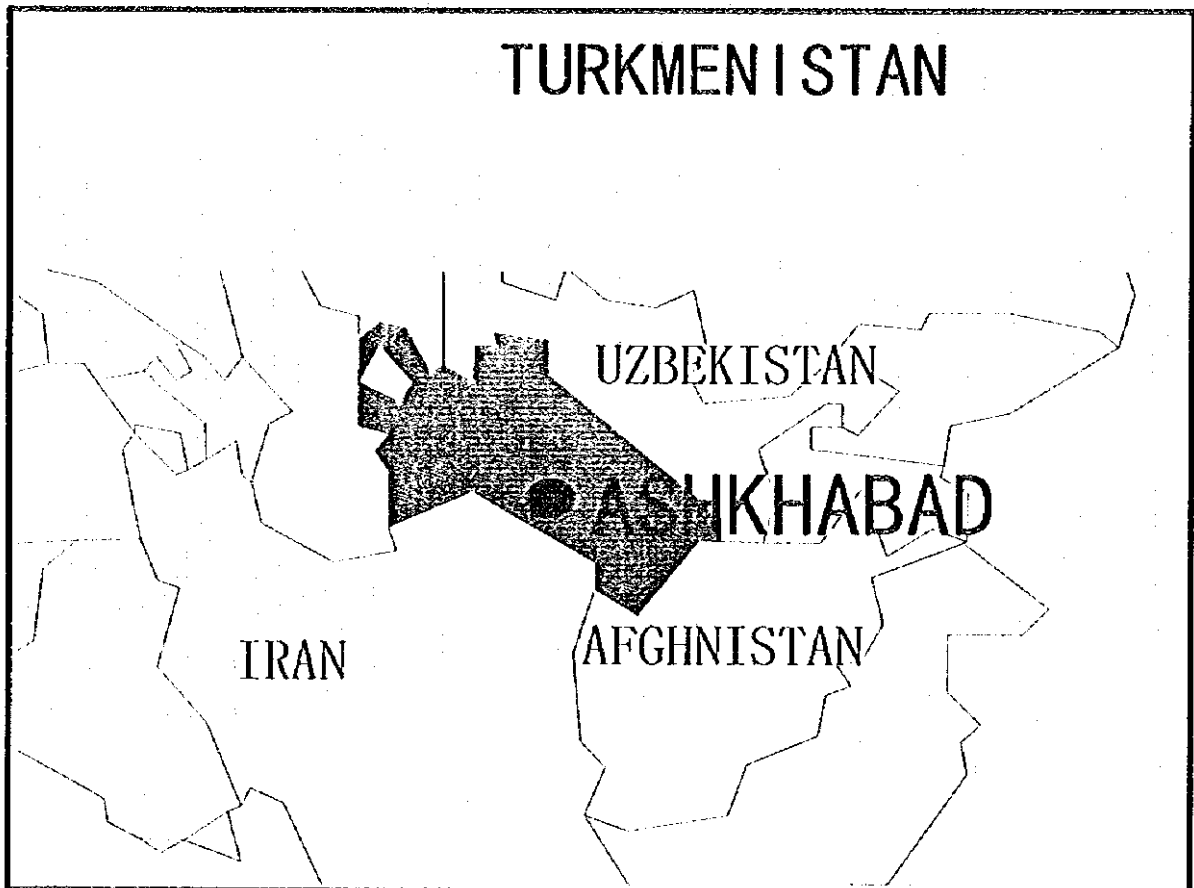
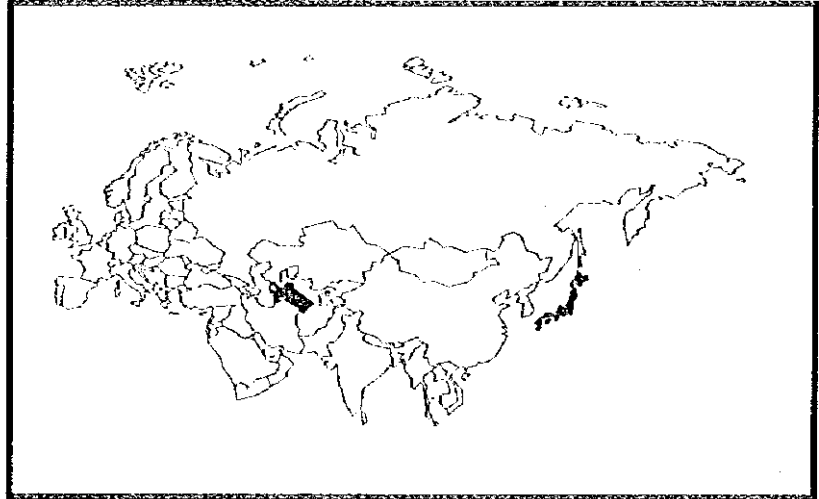
Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,



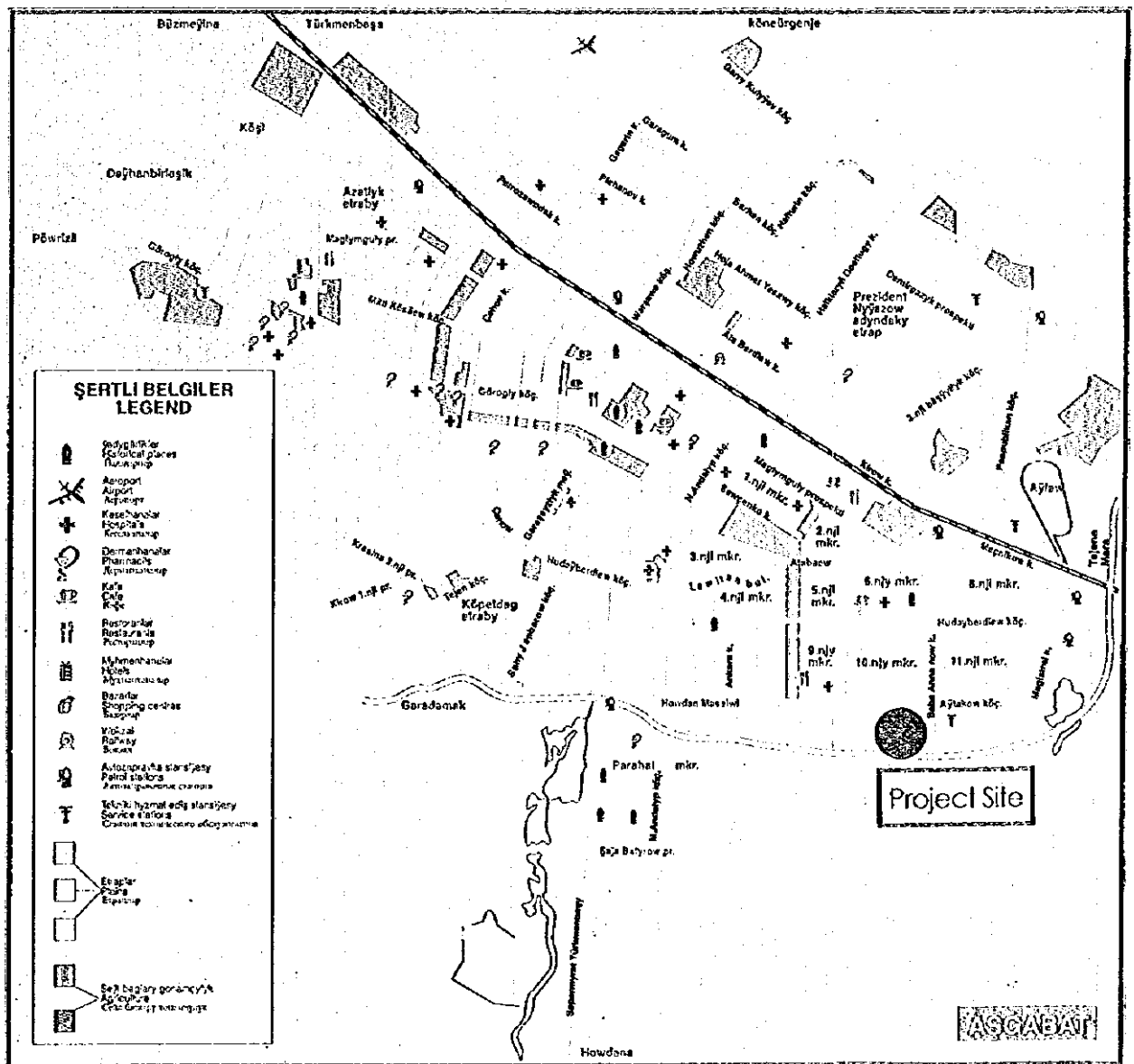
Ryoji Harada
Project manager,
Basic design study team on
the Project for Improvement of Medical
Equipment
International Total Engineering Corporation

LOCATION MAP



LOCATION MAP

ASHKABAD CITY



Abbreviations

MOH: Ministry of Health and Medical Industry

ICU: Intensive Care Unit

USAID: United States Agency for International Development

AIHA: American International Health Alliance

WHO: World Health Organization

EU: European Union

TACIS: Technical Assistance for CIS (Commonwealth of Independent States)

UNICEF: United Nations International Children's Emergency Fund

UNFPA: United Nations for Population Activities

UNDP: United Nations Development Programme

WID: Women in Development

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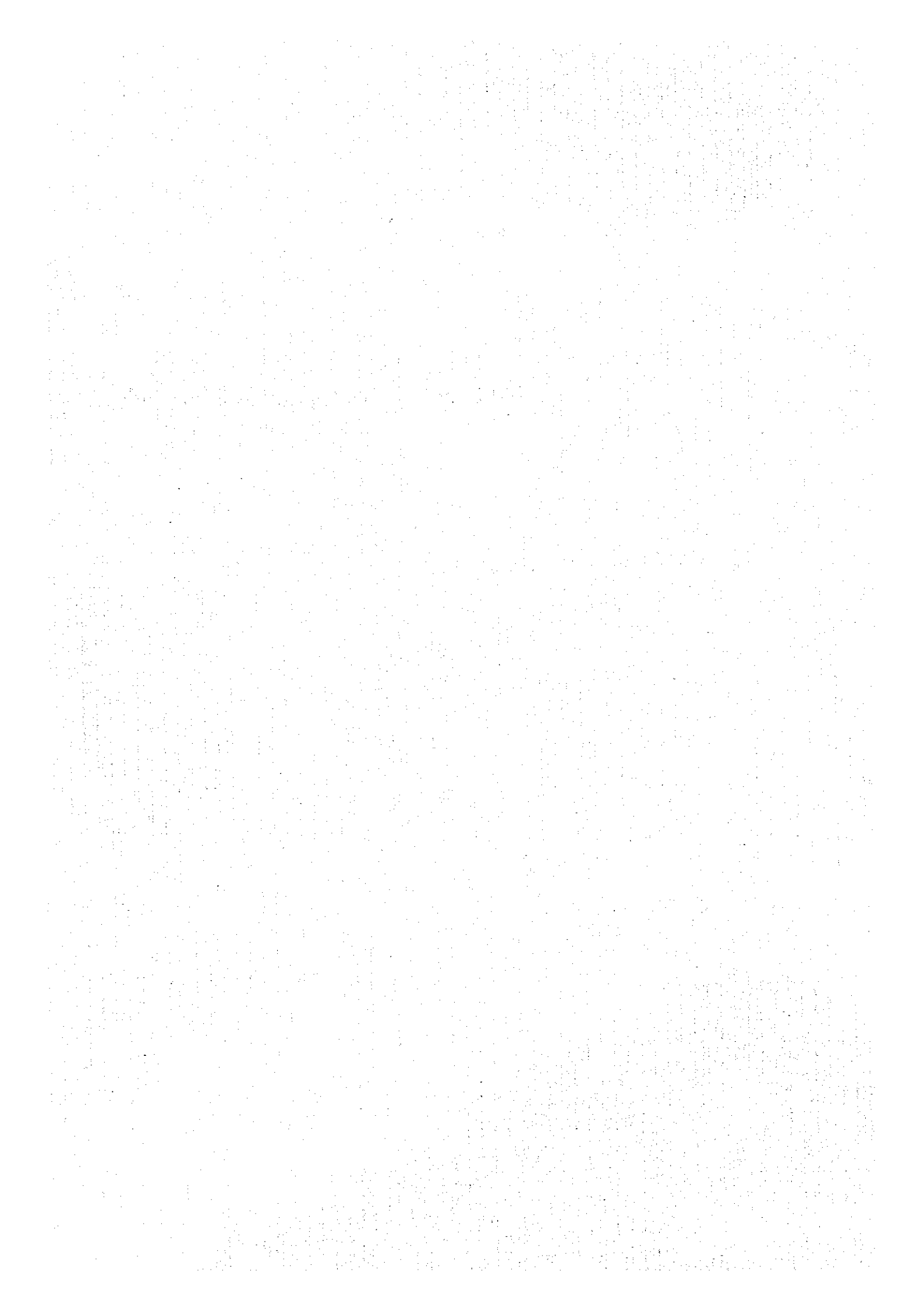
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Chapter 1 Background of the Project



Chapter 1 Background of the Project

1-1 Background of Request

The Treatment and Consulting Center by President of Turkmenistan S. A. Niyazow (hereinafter referred to as "the subject institution"), construction of which began in 1975 during the era of the former Soviet Union, opened as a 420-bedded hospital in 1992, after the Soviet Union's collapse, and was subsequently enlarged to 710 beds. After the Soviet Union collapsed, however, the supply of equipment and supplies from Russia essentially ceased and the subject institution was rendered unable to provide basic medical services. Despite being one of two general hospitals in Turkmenistan and positioned as a third level institution in the referral system, the subject institution suffers from pronounced shortages of equipment and supplies in its surgical and ICU departments and is unable to fulfill the role expected of it.

It was under these circumstances that Turkmenistan made a request about equipping the Center to a JICA project identification survey team dispatched to Turkmenistan from October to November 1995. The said team concluded that JICA would be willing to consider grant aid, primarily to the health care sector and other sectors basic to daily life. On the basis of discussions with the team, Turkmenistan formally requested equipment of the subject institution in December 1995. In light of a lack of sufficient basic data concerning health care in Turkmenistan and the fact that the project would be the first instance of Japanese grant aid to Turkmenistan, the Japanese authorities dispatched a survey team from June to July 1996 to conduct preliminary studies regarding the project.

The preliminary study team gathered basic data on health and medical care in Turkmenistan, confirmed the background and content of the request, conducted a site inspection, and investigated the activities of other donors. After conferring with the team, the Turkmenistan authorities revised the list of requested equipment, whereupon the request was resubmitted. Regarding the criteria for selecting the equipment, both sides agreed that the equipment to be furnished (1) would as a general rule replace existing decrepit equipment, (2) would generally be basic equipment, and (3) would be equipment whose proper and effective operation is sustainable. On the basis of the preliminary studies, the project was deemed to be appropriate and necessary. A basic design study concerning the procurement of equipment for the subject institution was conducted from October 13 to November 9, 1996. The study team compiled the results of this study as a Draft Report and explained them in general terms from January 19 to 31, 1997, in Turkmenistan.

1-2 Contents of Request

(1) Purpose of Request

The subject institution is a top-level hospital that fulfills an advisory role with respect to all subordinate medical institutions. It has been designated the top-priority target for improving Turkmen medical services. The purpose of the request for this project is to promote improvement of the subject institution's diagnostic and therapeutic functions through the procurement of equipment required by the institution.

(2) Entity Executing Project

The entity that will execute this project is the Turkmen Ministry of Health, Medicine, and Industry (hereinafter called as "MOH"). The subject institution is directly responsible for its own operation and maintenance. The MOH comprehensively supports the subject institution's operation and will secure the maintenance budget and personnel required for the project's execution.

(3) Summary of Request

1) Request's Subject Institution

The project's institution is the Treatment and Consulting Center by President of Turkmenistan S. A. Niyazow in the city of Ashkhabad, the Turkmen capital.

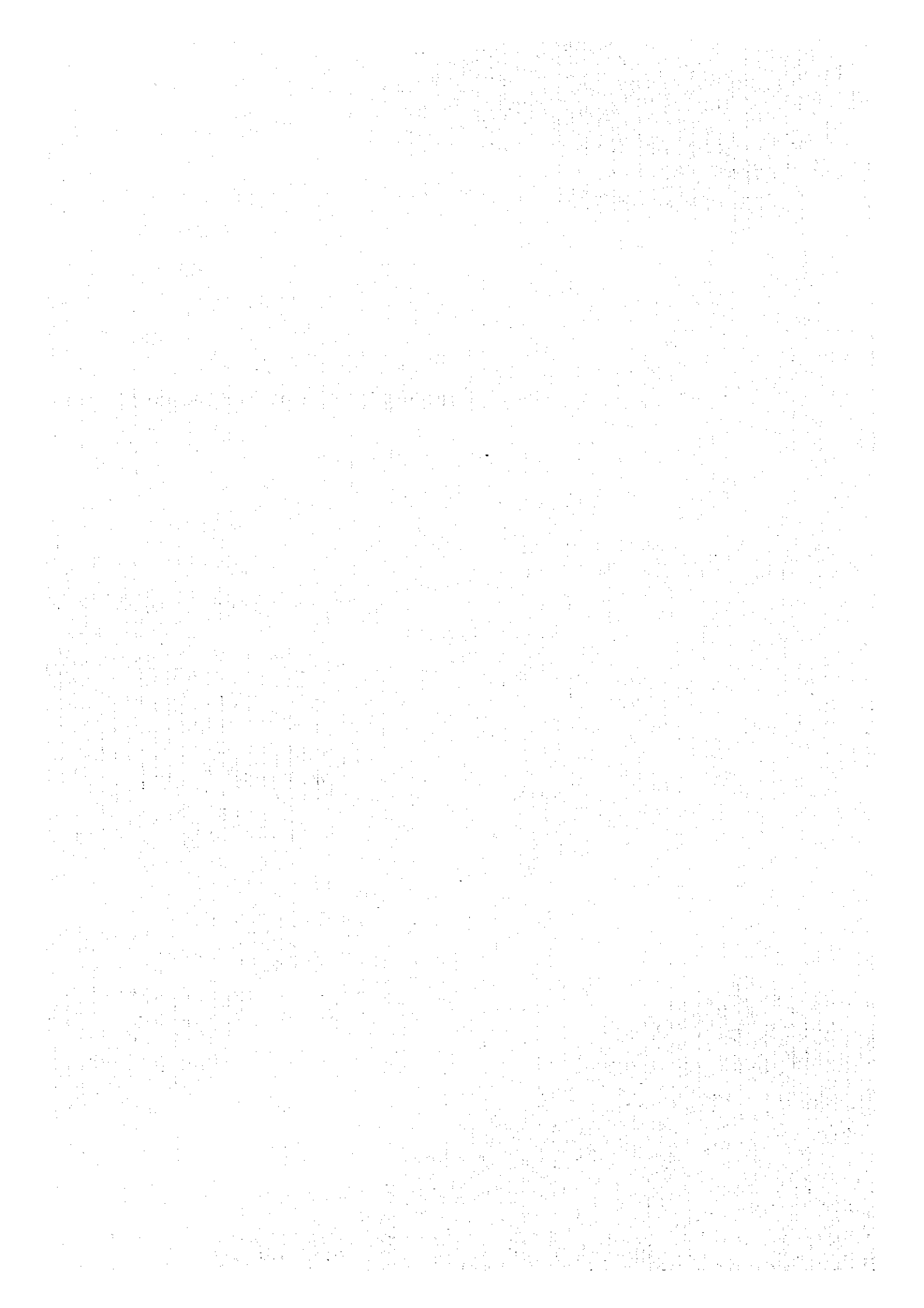
2) Summary of Requested Equipment

The equipment requested for this project is summarized in Table 1-1 below.

Table 1-1 Main Equipment Requested for the Project

Department	Main Equipment
ICU	Recovery Bed, Bed Side Monitor, Defibrillator, Ventilator, X-ray Mobile Unit, Electroencephalograph etc.
Operating Theater	Anesthesia Machine, Laparoscope, X-ray TV Mobile Unit, Defibrillator, Operating Microscope, Dental Unit etc.
Laboratory	Blood Coagulation Meter, Spectrophotometer, CO2 Incubator, Electrolyte Analyzer, Centrifuge etc.
Endoscopic Examination	Gastrointestinal Fiberscope, Duodenofiberscope, Colonofiberscope, Rhino-Laryngofiberscope, Bronchofiberscope Endoscopic TV System, Endoscopic Washer, Halogen Light Source for Endoscope etc.
Diagnostic Examination	Electrocardiograph, Diagnostic Ultrasound Scanner, X-ray Diagnostic Table Unit, X-ray Film Processor, Electrocardiograph, Angiography System etc.
Rehabilitation / Physiotherapy	Low Frequency Therapy Unit, Microwave Therapy Unit, Short-wave Therapy Unit, Ultrasound Therapy Unit, Ultraviolet Lamp, Infrared Lamp, Electric Traction Unit etc.
Hospital Equipment	High Pressure Steam Sterilizer, Hot Air Sterilizer, Formalin Gas Sterilizer, Ultrasonic Washer, Standby Generator etc.

Chapter 2 Content of the Project



Chapter 2 Content of the Project

2-1 Objectives of the Project

2-1-1 Relation to Higher-Priority Plan

In 1992 the president of Turkmenistan announced "Ten-Year Welfare Improvement Plan" for ensuring the health and welfare of the Turkmenistan people. The main points of the plan are as follows.

(1) Augmentation of Health-Care Funding and Medical Services

The following measures are to be implemented to maintain the people's health.

- 1) The health-care budget will be increased from 10% to 12% of annual revenue by 2000.
- 2) Each year \$120 million will be appropriated in the budget to install modern equipment and purchase medical supplies.
- 3) Import duties on medical equipment will be abolished.
- 4) Medical professionals' wages will be raised.
- 5) The budget required to build hospitals and clinics will be increased to 3.5 times its current level.
- 6) The number of hospital beds will be increased to a total of 22,700, housed in a total of 104 hospitals and 102 clinics, pursuant to a plan to construct hospitals and clinics between 1993 and 2000.
- 7) A family-doctor medical-care system will be established by 2000.
- 8) Foreign investment and loans will be used to procure medical equipment and supplies and manufacture pharmaceuticals and hospital supplies.

(2) Medical Technology, Research, and Education

Improvement of medical technology and promotion of research are essential to maintaining national health. The plan also places priority on ① health care for mothers and children, ② elevation of people's standard of living, and ③ infectious disease control and sanitation problems.

(3) Improvement of Disease Prevention and Sanitary Conditions

The government will establish sanitary standards for drinking water and environmental standards for industry, and implement a food inspection system.

2-1-2 Aim of Project

In Turkmenistan's medical-service delivery system, the subject institution is a institution providing third-level medical services primarily in surgical and medical specialties. Functionally improving the subject institution is the target of this project, which is positioned as a concrete measure for achieving one aim of the Ten-Year Welfare Improvement Plan: augmentation of medical services-in particular, improvement of specialized medical services. Further, the subject institution has a teaching function for a medical college and for physicians' postgraduate education, as well as an advisory agency for subordinate medical institutions. Consequently, this project can also be said to be intended to improve Turkmenistan's overall medical-service supply system by promoting improvement of medical education and subordinate medical institutions' medical technology.

2-2 Basic Concept of the Project

2-2-1 Subject Institution's Position

(1) Referral System

Turkmenistan's medical referral system is structured as follows.

Table 2-1: Turkmenistan's Medical Referral System

Level; Facilities		Inpatient Facilities	Outpatient Facilities
3rd Level	National	General hospitals Research hospitals Specialized hospitals Pediatric hospitals Hospitals for the handicapped	Blood/AIDS-prevention centers Diagnostic centers
3rd - 2nd Level	Province	General hospitals Specialized hospitals Pediatric hospitals Obstetric Hospitals	Blood/AIDS-prevention centers
3rd - 2nd Level	City	Municipal hospitals Pediatric hospitals Obstetric Hospitals Emergency Hospitals	Large-scale polyclinics Medium-scale polyclinics Infant polyclinics
2nd Level	Local	Hospitals	
1st Level	Local, District	Clinics (health posts)	

(Source: MOH, 1996)

On the table above, the subject institution corresponds to a national general hospital. In particular, it is an institution to which patients are referred from subordinate medical institutions nationwide for specialized surgical and medical care. It also functions as a teaching hospital with specialized courses in eight medical specialties and as a training center for second-level institutions' nurses and other medical personnel.

Therefore the subject institution is positioned in the Turkmenistan medical referral system as the country's referral center for specialized surgical and medical care.

(2) Relation to and Allocation of Functions Between Other Specialized Hospitals and Affiliated Medical Institutions.

The medical institutions in the city of Ashkhabad that are on the same level as the subject institution are as follows.

- a. Pirogov Memorial Hospital
- b. Shimashko Memorial Hospital
- c. National Diagnostic Center
- d. Tuberculosis Sanatorium
- e. Cancer Research Hospital
- f. Ophthalmology Research Hospital
- g. Dermatology Hospital
- h. Infectious Disease Hospital
- i. Railway Hospital
- j. Mothers and Children's Hospital, etc.

Other affiliated institutions include the Central Blood Center and Oxygen Supply Plant.

Of the above institutions, those with the same type of medical-care functions or functional affiliations with the subject institution are listed below.

1) Pirogov Memorial Hospital

Pirogov Memorial Hospital has the only angiography equipment in Turkmenistan. Until the equipment broke down recently, it was used to perform angiocardiography and cardiac surgery.

In terms of the relation between Pirogov Memorial and the subject institution, emergency surgery is performed at Pirogov Memorial, while ordinary and relatively difficult surgical procedures are performed at the subject institution.

2) Shimashko Hospital

Like Pirogov Hospital, Shimashko Hospital is an institution that handles emergency surgery.

3) National Diagnostic Center

The Center opened in 1989, at which time it was the highest-level institution. In terms of functions, it performs radiological diagnosis, endoscopy, functional testing, testing of neurological, endocrinological and pulmonary function, ultrasonography, and clinical testing. Its permanent staff includes specialists in

14 specialties. Patients are referred to the Center by family doctors and polyclinics throughout Turkmenistan for diagnoses by specialists in internal medicine, surgery, endocrinology, neurology, and other specialties.

In terms of the relation between the Center and the subject institution, the subject institution refers patients to the Center for C/T (Computerized Tomography), endoscopic diagnosis, and some blood tests (electrolyte, and so on.) because it lacks the capability to perform these functions itself.

4) Central Blood Center

The Central Blood Center supplies blood products in response to demand from medical institutions in the Ashkhabad region. It performs every step in the process, from collection of blood from donors to testing, manufacture of blood products (including cryo-preparations, and so on.), and delivery. Nearly all its equipment was manufactured in the former Soviet Union, but some testing equipment is Finnish-made. The Center uses both blood bags and blood bottles. For sterilization methods, it uses steam sterilization for equipment and bottles and filtration sterilization for blood-borne bacteria. It also conducts screening tests for AIDS, hepatitis B and C, syphilis, and other infectious diseases. To secure blood, it relies on blood donations and purchases. The subject institution supplies adequate quantities of blood, including component blood products required for surgery, to the medical institutions it oversees.

2-2-2 Selection of Medical Equipment

The types and quantities of medical equipment will be limited to a range within which it is possible to ensure the potential for technical and financial development. Equipment's specifications, will meet the standards that can be maintained locally. Specifically, equipment will be limited to that which can be maintained by the service capabilities of the Turkmen Med-Tech Service and equipment agents in Russia, Kazakhstan, and other neighboring countries. On the basis of the above, the proposed guidelines for determining equipment specifications and quantities are summarized as follows.

(1) Equipment Specifications

- * It is desirable to avoid automatic and computer-controlled equipment. Standards/specifications are set for manual or semi-automatic equipment, or easily repaired mechanical equipment, similar to current equipment, that does not require special replacement parts.

* To reduce operation and maintenance costs, it is necessary to consider setting specifications that minimize use of consumable supplies, such as purchased reagents.

* For equipment requiring periodic service or the purchase of consumable supplies, it is planned to procure products for which there are equipment agents able to dispatch technical personnel and/or furnish supplies from Russia or neighboring Central Asian countries.

(2) Equipment Quantities

* Quantities are determined taking into consideration the following factors, ascertained by means of on-site investigation: the subject institution's number of medical personnel; its activity record, including number of surgical cases, tests performed.; the level of its medical technology; frequency of use and remaining life of current equipment; projections of future increases in patients; and so on.

2-3 Basic Design

2-3-1 Design Concept

(1) Policy Concerning Natural Conditions

- * Voltage stabilizers should be obtained for computers, ultrasound diagnostic equipment, inspection devices, and other types of machinery for which voltage fluctuations have the potential to cause damage, affect performance, or shorten the useful life of the machine.
- * Similarly, where hardness in city water supplies affects devices such as water distillation equipment and wet sterilization equipment, water softeners fitted with filters should be installed as peripheral devices to remove hardness, turbidity, and the like from hard city water.
- * Priority should be given to machinery with a normal operating temperature range of around -5 °C through 45 °C.

(2) Policy Concerning Social Conditions

- * Ongoing maintenance costs should be kept as low as possible in light of the current economic circumstances.
- * Since Russian is generally used in Turkmenistan with respect to technical terms, Russian versions of equipment instruction manuals and the like should be prepared. The display panels on life support devices should also be printed in Russian.

(3) Policy Concerning Use of Local Manufacturers and Local Materials and Equipment

- * Given that most equipment agents have bases in Moscow and training is more convenient in Russian, technical personnel dispatched for on-site installation, training, and the like should be Russian.
- * Unpacking of equipment and transport to the required location should be carried out by local contractors in Turkmenistan.

(4) Policy Concerning Maintenance Capacity of Implementing Organization

- * Equipment that requires an ongoing supply of consumable supply and replacement parts should be procured from manufacturers having local agents in neighboring countries. When procuring equipment that requires maintenance, priority should be given to manufacturers with outlets in neighboring countries and permanent technical service staff on hand.
- * Local technical personnel should receive training in maintenance techniques such

as daily and periodical inspections at the time of installation.

(5) Policy Concerning the Scope and Grade of Facilities and Equipment

- * Washing, sterilization, and other equipment are planned to procure in order to boost the capacity of the central sterilization department. The addition of educational function to some of equipment such as an endoscope for training purposes in order to boost the training capacity should also be considered.
- * Secondary work such as installation of water inlet and outlet pipes and exhaust steam ducts for the high pressure sterilizer should partially fall under the scope of work undertaken by the Japanese side.
- * The equipment grade shall conform to fundamental and general standards required with respect to ordinary treatment at the subject institution.

(6) Policy Concerning Work Period

- * The work set out in this plan should be completed within one fiscal year, in accordance with the framework of Japanese Grant Aid.

2-3-2 Basic Design

(1) Overall Project

With the exception of power generators, most of the equipment represents updates of existing equipment rather than totally new equipment. In most cases, the basic infrastructure such as electric wiring and water supply and waste pipes is already largely in place. Installation will therefore require only relatively simple tasks such as removing old equipment and turning off water supply and waste valves.

The equipment will be installed in three main sections: diagnosis, treatment, and services. In the diagnosis section, the new equipment will improve the level of diagnosis. In the treatment section, it will boost the efficiency of the surgery department to enable it to keep abreast of demand for surgery, and also improve the level of auxiliary treatment for inpatients to promote early recovery. In the services section, the new equipment will help to increase operating efficiency in the surgery department, prevent the infections in the hospital, and improve the medical administration efficiency.

(2) Equipment Plan

1) Specifications of Main Items of Equipment in the Plan

The main equipment specifications are given on the next page.

Table2-2 Specifications of Main Items of Equipment

NO	Equipment	Q'ty	Composition	Specifications	Purpose
Intensive Care Unit					
3	Bed Side Monitor	15	1. Main Unit 2. SpO2 Probe 3. Stand	1. Parameters (ECG, Temperature, Heart rate, SpO2, NIBP) 2. Display (LCD) 3. Defibrillation discharge protection	For monitoring of severe or post-operation patient. Monitor of lung and heart function continuously.
4	Defibrillator	2	1. Main Unit 2. Trolley	1. Defibrillator • 3.5~360 J • Charging Time 10sec 2. ECG • 3-electrode mode • Gain 1/2, 1, 2, 4	For urgent treatment of ventricular or auricular fibrillation. Provide instant electrical stimulation to heart.
5-1	Ventilator for Adult	4	1. Main Unit 2. Humidifier 3. Air-compressor 4. Trolley	1. Control principle • Volume, Pressure, Time, with Alarm 2. Tidal volume(1-30L/m 3. Inspiration time • 0.5~5.0sec.	For treatment of respiratory insufficiency and hypopnea. Assist a patient in respiring.
5-2	Ventilator for Child	1	1. Main Unit 2. Humidifier 3. Air-compressor 4. Trolley	1. Control principle • Volume, Pressure, Time, with Alarm 2. Tidal volume(1-30L/m 3. Inspiration time • 0.2~3.0sec.	"ditto" (For child)
10	X-ray Mobile Unit	1	1. Main Unit 2. Trolley	1. Power • Battery Rechargeable 2. X-ray tube unit • Voltage 50~125KV • Current ranges • 0.4-320mAs	For Radiography in Ward and Intensive Care Unit(ICU).
12	Electroencephlograph, Portable	1	1. Main Unit 2. Photo Stimulator 3. Trolley	1. Number of Channels • 10 channels 2. Display (LCD) 3. Recorder • Ink recording	For diagnosis of epilepsy, encephaloma, cerebrovascular disorder, injury, encephalomyelitis.
OPERATION THEATER					
13	Anesthesia Unit with Ventilator	5	1. Main Unit 2. Ventilator 3. Reducing Valve 4. Vaporizer 5. Trolley	1. Anesthesia Unit • O2, N2O Flowmeter (0.5-10L/min.) • Safety Device (Low O2 pressure, N2O Supply Stop, O2 flash)	Anesthesia machine for safty inhalation anesthetic operation.
14	Electrosurgical Unit	5	1. Main Unit 2. Trolley 3. Foot Switch 4. Electrode Point	1. Output • Cutting(250W) • Coagulation(120W) • Mixture(200W) • Bipole(18W)	By high frequency current, provide treatment of cutting, coagulation and mixture on tissue in operation theater.
15-1	Laporoscope Set	2	1. Main Unit 2. Light source	1. Laporoscope • Light source 2. Telescope • 10, 5mm	For morphological diagnosis, biopsy and surgical treatment on liver in chronic hepatitis, cirrhosis, hepatophyma.

Table2-2 Specifications of Main Items of Equipment

NO	Equipment	Q'ty	Composition	Specifications	Purpose
15-2	Instrument Set for Abdominal Wall-Lift Method	2	1. Abdominal Wall-Lift Set 2. Instrument Set	1. Trocars & Sheaths • $\phi 5, 10, 11, 12$ 2. Suction tubes 3. Ligators Set 4. Electrode-type Kelly Forceps	Use surgical instrument for laparoscopic surgery by abdominal wall-lifting device.
15-3	TV System for Laproscope Set	1	1. TV System 2. Electrosurgical Unit 3. Trolley	1. Light source (Xenon) 2. Surgical Unit • Cutting, Coagulation 3. TV Monitor (20inch)	TV system for laparoscopic surgery, showing inside of abdomen in operation theater.
16-1	X-ray TV Mobile Unit	1	1. Main Unit 2. C-arm Stand 3. X-ray TV Monitor 4. Trolley	1. X-ray tube unit • Voltage 40~150KV • Current ranges (0.2-160mAs) 2. TV Monitor (9inch)	For surgical and orthopedics operation, provide fluoroscopic imaging in operation theater.
16-2	Operating Table for X-ray TV Mobile Unit	1	1. Main Unit 2. Mattress Set	1. Table Top • X-ray passing type • Height adjustment (80-100cm) • Slide range (60cm)	It is able to pass X-ray through operation table for radiography and fluoroscopy by X-ray TV unit.
17	X-ray Mobile Unit	1	1. Main Unit 2. Trolley	1. Power • Battery Rechargeable 2. X-ray tube unit • Voltage 50~125KV • Current ranges • 0.4-320mAs	Radiographic device using in operation theater.
18	Defibrillator	2	1. Main Unit 2. Trolley	1. Defibrillator • 3.5~360 J • Charging Time 10sec 2. ECG • 3-electrode mode • Gain 1/2, 1, 2, 4	For urgent treatment of ventricular or auricular fibrillation. Provide instant electrical stimulation to heart.
19	Operation Monitor	1	1. Main Unit 2. SpO2 Probe 3. Stand	1. Parameters (ECG, Temperature, Heart rate, SpO2, NIBP) 2. Display (LCD) 3. Defibrillation discharge protection	For monitoring of a patient's lung and heart function in operation theater.
20	Operating Microscope for ENT	1	1. Main Unit 2. Stand 3. Assistant Scope	1. Eyepieces (x12.5) 2. Objective • 200-300mm 3. Light source • Halogen lamp	For micro resection, vascular surgery, nerve suture in otorhinolaryngology department.
21-1	Operating Microscope for Neurosurgery	1	1. Main Unit 2. Stand 3. Assistant Scope	1. Eyepieces (x12.5) 2. Objective • 200-300mm 3. Light source • Halogen lamp	For micro resection, vascular surgery, nerve suture in neurosurgery department.

Table2-2 Specifications of Main Items of Equipment

NO	Equipment	Q'ty	Composition	Specifications	Purpose
21-2	Operating Microscope for Angiosurgery	1	1. Main Unit 2. Stand 3. Assistant Scope	1. Eyepieces (x12.5) 2. Objective • 200-300mm 3. Light source • Halogen lamp	For micro resection, vascular surgery, nerve suture in neurosurgery department.
40	Dental Unit with Chair and Lamp	4	1. Main Unit 2. Compressor 3. Stool for Doctor 4. Water Softner	1. Chair Unit • with Handpiece, Operating light 2. Air Compressor • Power (0.75KVA)	Holding a patent for dental & oral surgery diagnosis and treatment.
41	Servotorinic Micro Motor	1	1. Main Unit 2. Foot Switch	1. Motor output • 22,000RPM 2. Handpiece (Drill, Grind, Saw)	Drill motor for bone operation in oral surgery.
43	Titanium Microplate System	1	1. Micro Plate 2. Screw Set 3. Driver 4. Oral Light	1. Maerial • Titanium	Affinity and anti-corrosion metal for gnathic and facial bone surgery.
LABORATORY					
44	Blood Coagulation Meter	1	1. Main Unit 2. Micro Pipette	1. Measuring method • Photometric 2. Parameter • PT, APTT, PT, TT	Analyze blood factors by measuring coagulation time in clinical laboratory.
45	Spectrophotometer	2	1. Main Unit 2. Distributer 3. Printer	1. Wavelength • 340-900nm 2. Parameter • Abs. T % 3. Monitor (CRT)	Analyze blood sample by spectrophotometry device in bio-chemistry laboratory.
48	CO2 Incubator	1	1. Main Unit 2. Stand	1. CO2 density range • 0-20% 2. Temperature range • Room temp. 15~50°C 3. Capacity (170L)	Incubation device for anaerobic bacterium in bacteriology laboratory.
49	Electrolyte Analyzer	1	1. Main Unit 2. Standard Reagent 3. Dilution Set	1. Measurement method • Ion selective electrode 2. Parameter (Na, K, Cl) 3. Sample • Serum, Urine	Analyze concentration of blood electrolyte (Na, K, Cl) :
51	High Speed Centrifuge	1	1. Main Unit 2. Rotor	1. Max speed (3000RPM) 2. Max Capacity • 2000ml 3. Speed Control • Microprocessor	For separation of blood cell and serum from patient blood in laboratory.

Table2-2 Specifications of Main Items of Equipment

NO	Equipment	Qty	Composition	Specifications	Purpose
ENDOSCOPIC EXAMINATION					
56	Gastrointestinal Fiberscope	2	1. Main Unit 2. Biopsy Forceps	1. Distal end diameter • 10mm 2. Working length • 1000mm 3. Field of view • 100°	For diagnosis of gastric ulcer and cancer by endoscopy.
57	Duodenofiberscope	1	1. Main Unit 2. Biopsy Forceps	1. Distal end diameter • 11mm 2. Working length • 1250mm 3. Field of view • 110°	For diagnosis of duodenal ulcer and collect pancreatic juice by endoscopy.
58	Colonofiberscope	2	1. Main Unit 2. Biopsy Forceps	1. Distal end diameter • 12mm 2. Working length • 150mm 3. Field of view • 130°	For diagnosis of colon and endoscopic biopsy by endoscopy.
60	Bronchofiberscope	2	1. Main Unit 2. Biopsy Forceps	1. Distal end diameter • 6mm 2. Working length • 550mm 3. Field of view • 120°	For diagnosis of lung cancer, tuberculosis and bronchitis and treatment of foreign body by endoscopy.
63	Endoscopic TV System	3	1. TV System 2. TV Monitor 3. Trolley	1. TV Monitor • Color 14-inch 2. Trolley • With caster	For diagnosis and observe by projecting observation image on TV monitor.
65	Endoscopic Washer	1	1. Main Unit 2. Forceps Washer 3. Water Softner	1. Disinfection tub (15L) 2. Washing tub (2.5L) 3. Water flow rate • 11-13L/min.	For washing, disinfection and rinsing of fiberoscopes and forceps.
68	Electro Surgery Set	3	1. Main Unit 2. Foot Switch	1. Output method • Cutting • Coagulation • Blend	For treatment of cutting, blending and coagulating by endoscopy.
EXAMINATION / DIAGNOSTIC					
71	Spiro Analyzer	1	1. Main Unit	1. Detection • Pneumotachometer 2. Parameter • VC, FVC, FV, MVV, MV	For pre-operation examination and diagnosis of respiratory disease.
72	Diagnostic Ultrasound Scanner with Doppler	1	1. Main Unit 2. Probe Set 3. Printer 4. Doppler Unit	1. Display mode • B, B/B, B/M, M, D 2. Scan probe • Linear, Convex, Sector 3. Monitor (12-inch) 4. Black and White Doppler	For diagnosis of tumor, gallstone, malformation, cardiomyopathy and cardiovalvulitis.

Table2-2 Specifications of Main Items of Equipment

NO	Equipment	Q'ty	Composition	Specifications	Purpose
73	Ultrasound Scanner, Portable	1	1. Main Unit 2. Probe Set 3. Printer	1. Display mode • B, B/B, B/M, M 2. Scan probe • Linear, Convex 3. Monitor (9-inch)	For diagnosis of tumor, gallstone and abnormal pregnancy.
74-1	X-ray Diagnostic Table Unit	1	1. Main Unit 2. X-ray Table Unit 3. Bucky Stand	1. General Radiography • Voltage (40-150KV) • Current (10-600mA) 2. Fluoroscopy • Voltage (40-120KV) • Current (0.4-4mA)	For radiography and tomography of bone, hearing organ, lung and mediastinum.
74-2	X-ray Film Processor	1	1. Main Unit 2. Film Illuminator 3. Film Cassettes 4. Intensifying Screen	1. Processing Cycle • Developing, Fixing, Washing, Drying 2. Processing Time • 90sec./sheet	For processing of X-ray film automatically.
75-1	Panoramic X-ray Unit for Dental	1	1. Main Unit	1. X-ray tube • Voltage (60-80KV) • Current (5-10mA) 2. Radiography • Panoramic • Cephalic	For radiography of maxillary antrum, odonto, submaxilla and jaw joint.
76	Electroencephlograph	1	1. Main Unit 2. Photo Stimulator 3. Trolley	1. Number of Channels • 14 channels 2. Display • B/W CRT(12-inch) 3. Recorder • Ink recording	For diagnosis of epilepsy, encephaloma, cerebrovascular disorder, injury, encephalomyelitis.
94	Angiography System	1	1. Diagnostic Table 2. Contrast Medium Injector	1. Tube voltage:150KV 2. Tube current:800mAs	For examination of angiography for abdomen and legs, insert catheter in blood vessel
REHABILITATION / PHYSIOTHERAPY					
77	Hydrotherapy Bath Unit	1	1. Main Unit	1. Hydrotherapy • Bubble Jet Stream • Whirlpool	For treatment of myoparalysis and post-operation patient by hydrotherapy.
85	Electric Traction Unit	2	1. Main Unit 2. Traction Chair 3. Traction Set	1. Traction treatment • Lumbar, Cervical 2. Safty device	For traction treatment of lumbar and cervical vertebrae.
HOSPITAL EQUIPMENT					
86-1	High Pressure Steam Sterilizer, Large	3	1. Main Unit 2. Container	1. Strilize method • High Pressure Steam 2. Capacity • 500 x 900 x 500mm	For sterilize of material for operation theater.

Table2-2. Specifications of Main Items of Equipment

NO	Equipment	Q'ty	Composition	Specifications	Purpose
86-2	High Pressure Steam Sterilizer, Small	2	1. Main Unit 2. Container	1. Sterilize method • High Pressure Steam 2. Capacity • 500 x 500 x 500mm	For sterilize of medicine bottle in pharmacy.
86-3	Water Softener for High Pressure Steam Sterilizer	2	1. Booster Pump 2. Micron Filter 3. Salt Treatment Tank	1. Pre-filter (25 μ) 2. Post-filter (5 μ) 3. Ion Exchange Method 4. Max Water Flow • 2.5m ³ /h 5. Water Consumption 2.5m ³	For supply soft water to sterilizer by removing hardness from tap water.
89	Burn Bath Unit	2	1. Main Unit	1. Function • Shower unit 2. Cycle filter sterilization • Filter / Silver-ion germicidal unit	For treatment of thermal burn by bathing of disinfection solution.
90	Standby Generator	1	1. Main Unit	1. Engine • Diesel type 2. Generator Out-put • 380/220V • 150KVA	For supply electricity for operation theater and ICU in emergency.
92	Ultrasonic Washer	1	1. Main Unit 2. Washing Basket	1. Cleaning method • Ultrasonic cleaner 2. Capacity (60L)	For washing of forceps from operation theater.
93	Formalin Gas Sterilizer	1	1. Main Unit	1. Sterilize cycle • (3, 4hrs) Heating, Evaporation, Sterilize, Neutralization 2. Capacity (700x600x450mm)	For sterilize of non heat-resistance material in operation theater.

2) Grounds for Selection and Modification of Main Equipment

- Blood Gas Analyzer, Electrolyte Analyzer

There previously was no such existing equipment, but the new ICU is equipped with the whole-blood measurement type of blood gas analyzers and electrolyte analyzers. But because equipping the existing ICU department with overlapping equipment would result in the incurrence of maintenance expenses, procuring this equipment was deemed not highly appropriate. It was consequently decided not to include the equipment in the equipment plan.

- Blood Separator

At the City's Central Blood Center donated blood is separated into its components. The Center also supplies adequate quantities of component blood to the subject institution. Accordingly, there is little need to separate transfusion blood into components at the subject institution. Blood component separators are consequently not included in the equipment plan.

- Cardiac Operation Monitor

Since heart surgery monitors are not designed for general use, the specifications of the item will be modified to ordinary monitors used in operating theaters.

- Portable biochemical analyzer

At the moment, analyses are performed manually using a spectrophotometer. Given the number of samples, the number of different tests, and the level of future demand, there is certainly a need for new equipment. However, in light of the high cost of reagents and other materials and the lack of local equipment agents, it has been decided to omit such equipment from the plan.

- Endoscopic TV System, Endoscopic Suction Unit, Halogen Light Source for Endoscope, Electro Surgery Set

Although there are three endoscopic diagnosis rooms (Gastroscope Room, Colonoscope Room, and Bronchoscope Room), the decrepitude of the existing equipment is pronounced and impedes diagnostic and therapeutic activities. In addition, the equipment is used in conducting post-graduate education for physicians. Accordingly, to support improvement of diagnostic, therapeutic, and educational functions, procurement of three of each piece of equipment is planned.

- Universal Diagnostic Table (X-ray)

The subject department is presently using obsolete East European-made X-ray equipment to perform tomography of the thorax, spinal chord, and other parts of the body. Due to the equipment's decrepitude, however, it is not possible to obtain distinct images. Consequently, to improve diagnostic capabilities, procuring a tomography unit and an ordinary X-ray unit as a set is planned. The effective utilization of the equipment is supported by planning to concurrently procure an automatic X-ray film processor and other peripheral equipment.

- Angiographic System

The installation location is already secured for the equipment. There are no problems with respect to the technical level of specialist physicians. It is because angio equipment in a similar institution has performed three to five examinations per day since its installation in 1984 to the present and there are experienced doctors in the subject institution on angiography. And that the equipment is the only one existing in Turkmenistan, therefore, the need for the equipment is high. After a comprehensive study, however, though it was predicted that there will occur such problems as the high cost of catheter tubes and other consumable supplies and the maintenance problems that would arise due to the lack of a local agent of the equipment, Turkmenistan side promised firmly with the letter by a vice minister of MOH that MOH will appropriate budgetary measures for maintenance cost separately from ordinary budget of MOH and the subject institution will report to Japan side status on use of equipment positively. The study team appreciated highly these enthusiasm shown by the Turkmenistan side, which were reported to the Japanese government after the team returned to Japan. At the result of discussions which were held among concerned ministries in Japan side it is decided that the equipment is included in the plan finally and its specifications are of most basic composition aiming at angiography for abdomen and lower limbs.

- Oxygen Producing Equipment

Installation of oxygen generator would entail concurrent installation of new oxygen manifolds and piping because the existing oxygen pipes pose problems with respect to pressure and pipe diameter. In addition, maintaining the equipment involves periodic servicing and requires specialized knowledge. Accordingly, the equipment is not very appropriate for Japan's Grant Aid.

In terms of the equipment's safety, when oxygen and air mix, the resultant gas is explosive. Therefore the installation of such equipment on the site of a

hospital is highly hazardous. On the basis of conditions such as the above, installation of the equipment is deemed not very appropriate and it is not included in the equipment plan.

- Ultrasonic Washer

After use, surgical forceps are washed by hand. This method is not only inefficient, it poses a risk of nosocomial infection. The augmentation of sterilization capacity is supported by procuring ultrasonic cleaners, both to alleviate the Central Sterilization Room's workload and prevent nosocomial infection.

3) The Review of Equipment Requested

[Equipment Selection Criteria]

As for the equipment selection criteria, it was decided to plan the equipment to be included in the equipment plan through discussion between the Turkmenistan government and the team, taking into consideration the following matters.

- ① Equipment's necessity,
- ② Technical level of operators who would use the equipment,
- ③ Adequacy of equipment specifications,
- ④ Equipment deployment plan and deployment quantities,
- ⑤ Equipment maintenance system, and
- ⑥ Expense of maintenance & operation of equipment.

The appropriateness and necessity of the equipment on the list discussed with the Turkmenistan government was reviewed in detail in a domestic process. The review process is described below.

First, the requested equipment was classified into three categories: replacement, new, and supplemental. The equipment was then reviewed based on evaluation criteria shown below. Lastly, a final, overall judgment was made.

[Equipment Classification]

- Replacement Equipment "R" : Equipment that replaces existing equipment
- New Equipment "N" : Equipment to be procured for the first time
- Supplemental Equipment "S" : Equipment that quantitatively supplements existing equipment

[Evaluation Criteria]

1. Consideration of Necessity

- O : Equipment that must be replaced due to decrepitude of current equipment.

Equipment that must be provided or supplemented because it is indispensable to the subject hospital's medical-care activities.

× : Equipment whose necessity is deemed to be low based on medical-care activities; and equipment from which the patients who would benefit are considered to be few.

2. Consideration of Technical Level

O : Equipment deemed to fully usable by personnel of the technical level of those who would operate it.

× : Equipment whose operation is deemed to require a higher level of medical technique than presently exists; and equipment deemed to be inadequate for the current technical level.

3. Consideration of Equipment Specifications

O : Equipment whose specifications as requested are consistent with its intended use, the nature of the concerned medical-care activities, and peripheral equipment conditions.

△ : Equipment which is deemed appropriate to revise the specifications of before including in the equipment plan, based on the particulars of the request, peripheral equipment conditions, or other such factors.

4. Consideration of Equipment Quantity

O : Equipment whose deployment plan and quantity are deemed appropriate as requested.

△ : Equipment whose requested quantity must be adjusted based on its number of users, number of patients, deployment plan, or other such factors.

5. Consideration of Maintenance System

O : Equipment able to be serviced by an existing maintenance system, the manufacturer's authorized agent in a neighboring country, or the like.

× : Equipment deemed to be problematic with respect to servicing due to an inadequate service network, a problem in cooperating with the manufacturer's authorized agent, or the like.

6. Consideration of Cost of Maintenance & Operation of Equipment

O : Equipment that is deemed operable, and for which supplies, replacement parts, and the like are obtainable, at the current level of maintenance expenditures.

× : Equipment whose operation & maintenance cost is deemed to render it inoperable on the basis of the subject institution's maintenance costs or financial wherewithal.

[Overall Judgment]

O : Equipment decided to be included in the equipment plan as a result of reviewing the equipment request based on the evaluation criteria.

× : Equipment decided not to be included in the equipment plan as a result of reviewing the equipment request based on the evaluation criteria.

The table 2-3 indicates with a "O", "Δ", or "×" the results of the review of the requested equipment based on evaluation criteria 1 through 6. It indicates overall judgments with a "O" or "×".

The basic design equipment list is shown as Appendix 4. at the result of the above overall judgment.

Table2-3 The Review Results of Equipment Requested

No.	Equipment	Q'ty (A)	Priority	Class	1	2	3	4	5	6	Judge	Q'ty (B)
ICU												
1	Recovery Bed	5	B	R	○	○	○	○	○	○	○	5
2	Air Fluidized Support System with Bed	10	A	N	○	○	○	○	○	○	○	10
3	Bed Side Monitor	15	A	N	○	○	○	○	○	○	○	15
4	Defibrillator	2	A	S	○	○	○	○	○	○	○	2
5	Ventilator	10	A	S	○	○	○	△	○	○	○	5
6	Manual Resuscitator	10	B	S	○	○	○	△	○	○	○	5
7	Blood Gas Analyzer	1	B	N	×	○	○	○	○	○	×	0
8	Electrolyte Analyzer	1	B	N	×	○	○	○	○	○	×	0
9	Infusion Pump	20	A	S	○	○	○	△	○	○	○	15
10	Syringe Pump	20	A	S	○	○	○	△	○	○	○	15
11	Anesthesia Machine	1	A	N	×	○	○	○	○	○	×	0
12	Suction Unit	6	B	S	○	○	○	△	○	○	○	5
13	Electrosurgical Unit	1	A	N	×	○	○	○	○	○	×	0
14	X-ray Mobile Unit	1	A	R	○	○	○	○	○	○	○	1
15	Oxygen Tent	2	B	N	○	○	○	○	○	○	○	2
16	Blood Separator	2	A	N	×	○	○	○	○	×	×	0
17	Electroencephlograph, Portable	1	A	N	○	○	○	○	○	○	○	1
OPERATION THEATER												
18	Anesthesia Machine	5	A	R	○	○	△	○	○	○	○	5
19	Anesthesia Ventilator	5	A	R	○	○	△	○	○	○	○	5
20	Electrosurgical Unit	5	A	R	○	○	○	○	○	○	○	5
21	Laproscope for Cholecystectomy Set	1	A	S	○	○	○	○	○	○	○	1
22	Laproscope Set	3	A	S	○	○	○	△	○	○	○	1
23	X-ray TV Mobile Unit	2	A	N	○	○	○	△	○	○	○	1
24	X-ray Mobile Unit	1	A	R	○	○	○	○	○	○	○	1
25	Hyper Hypothermia Unit	1	A	N	×	○	○	○	○	○	×	0
26	Defibrillator	2	A	S	○	○	○	○	○	○	○	2
27	Cardiac Operation Monitor	1	A	N	○	○	△	○	○	○	○	1
28	Electrolyte Analyzer	1	B	N	×	○	○	○	○	○	×	0
29	Operating Microscope for ENT	1	A	N	○	○	○	○	○	○	○	1
30	Operating Microscope for Surgery	1	A	N	○	○	△	○	○	○	○	1
31	Operating Microscope for Neurosurgery	1	A	N	○	○	○	○	○	○	○	1
32	Operating Instrument Set	5	A	S	○	○	○	○	○	○	○	5
33	Gastrectomy Instrument Set	5	A	S	○	○	○	○	○	○	○	5
34	Cholecystotomy Instrument Set	5	A	S	○	○	○	○	○	○	○	5
35	Nephrectomy Instrument Set	5	A	S	○	○	○	○	○	○	○	5
36	Proslatotomy Instrument Set	5	A	S	○	○	○	○	○	○	○	5
37	Thyreidotomy Instrument Set	5	A	S	○	○	○	○	○	○	○	5
38	Appendectomy Instrument Set	5	A	S	○	○	○	○	○	○	○	5

Q'ty(A):Quantity of Request / Q'ty(B):On further investigation Quantity

Table 2-3 The Review Results of Equipment Requested

No.	Equipment	Q'ty (A)	Priority	Class	1	2	3	4	5	6	Judge	Q'ty (B)
39	Neurosurgery Instrument Set	5	A	S	○	○	○	○	○	○	○	5
40	Otolaryngology Surgical Instrument Set	5	A	S	○	○	○	○	○	○	○	5
41	Stomatology Surgical Instrument Set	5	A	S	○	○	○	○	○	○	○	5
42	Abdominal Surgery Instrument Set	5	A	S	×	○	○	○	○	○	×	0
43	Microsurgery Instrument Set	5	A	N	○	○	○	△	○	○	○	3
44	Cardiovascular Surgery Instrument Set	3	A	S	○	○	○	○	○	○	○	3
45	Emergency Tracheotomy Instrument Set	5	A	S	○	○	○	○	○	○	○	5
46	Electric Dermaotome	5	A	S	○	○	○	△	○	○	○	3
47	Set Instruments for Carotid Surgery	3	A	S	○	○	○	○	○	○	○	3
48	Set Instruments for Aorto-coronary Bypass	3	A	S	○	○	○	○	○	○	○	3
49	Plastic and Reconstructive Surgery Set	3	A	S	○	○	○	○	○	○	○	3
50	Dermatoplastic Surgery Set	3	A	S	○	○	○	○	○	○	○	3
51	Dental Unit with Chair and Lamp	4	A	R	○	○	○	○	○	○	○	4
52	Sarvotorinic Micro Motor	1	A	S	○	○	○	○	○	○	○	1
53	Obwegeser Set	1	A	S	○	○	○	○	○	○	○	1
54	Titanium Microplate System	1	A	S	○	○	○	○	○	○	○	1
LABORATORY												
55	Instant Chemistry Analyzer	2	B	N	○	○	○	○	×	×	×	0
56	Auto Blood Cell Counter	2	B	R	○	○	○	○	×	×	×	0
57	Blood Coagulation Meter	2	B	N	○	○	○	△	○	○	○	1
58	Photo Electric Colorimeter	2	B	R	○	○	○	○	○	○	○	2
59	Bilirubin Meter	1	A	N	○	○	○	○	○	○	○	1
60	Glucose Analyzer	1	A	N	○	○	○	○	○	○	○	1
61	Electrophoresis Apparatus	1	C	N	×	○	○	○	×	○	×	0
62	CO2 Incubator	1	B	N	○	○	○	○	○	○	○	1
63	Electrolyte Analyzer	1	A	N	○	○	○	○	○	○	○	1
64	Table Top Centrifuge	2	B	R	○	○	○	○	○	○	○	2
65	High Speed Centrifuge	1	C	R	○	○	○	○	○	○	○	1
66	Micro Hematocrite Centrifuge	1	A	N	○	○	○	○	○	○	○	1
67	Universal Microscope	6	A	S	○	○	○	○	○	○	○	6
68	Incubator	5	C	R	○	○	○	△	○	○	○	2
69	Flame Photometer	2	A	R	×	○	○	○	×	○	×	0
70	Analytical Balance	2	A	N	○	○	○	○	○	○	○	2
ENDOSCOPIC EXAMINATION												
71	Gastrointestinal Fiberscope	2	A	R	○	○	○	○	○	○	○	2
72	Duodenofiberscope	2	A	N	○	○	○	△	○	○	○	1
73	Colonofiberscope	2	A	R	○	○	○	○	○	○	○	2
74	Rhino-Laryngofiberscope	2	A	N	○	○	○	△	○	○	○	1
75	Bronchofiberscope	2	A	R	○	○	○	○	○	○	○	2
76	ENT Instrument Set	1	A	S	○	○	○	○	○	○	○	1

Q'ty(A):Quantity of Request / Q'ty(B):On further investigation Quantity

Table2-3 The Review Results of Equipment Requested

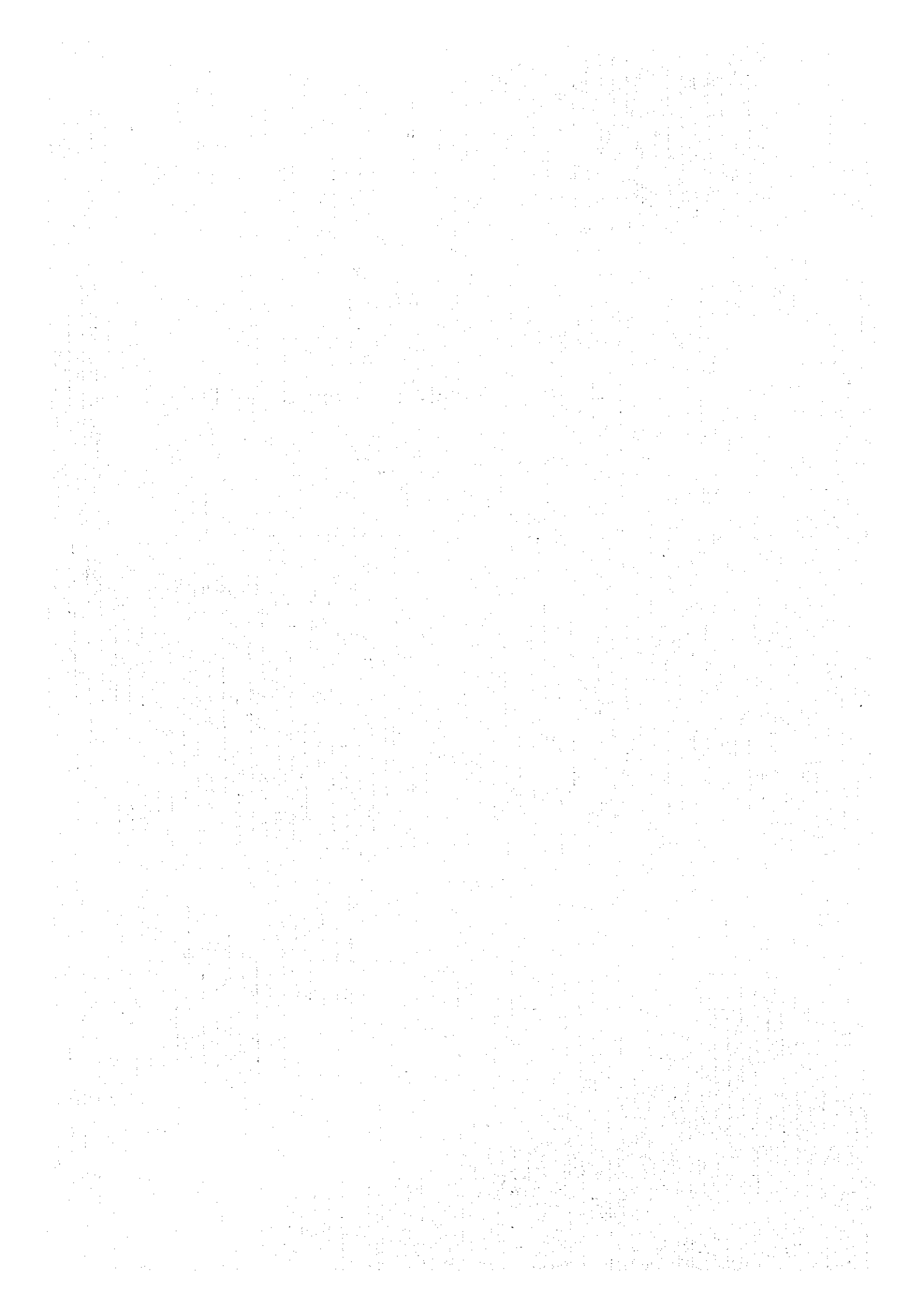
No.	Equipment	Q'ty (A)	Priority	Class	1	2	3	4	5	6	Judge	Q'ty (B)
77	Sigmoidoscope	2	A	N	×	○	○	○	○	○	×	0
78	Rectoscope	2	A	N	○	○	○	△	○	○	○	4
79	Endoscopic TV System	1	A	N	○	○	○	△	○	○	○	3
80	Endoscopic Suction Unit	2	A	R	○	○	○	△	○	○	○	3
81	Endoscopic Washer	1	A	N	○	○	○	○	○	○	○	1
82	Halogen Light Source for Endoscope	4	A	R	○	○	○	△	○	○	○	3
83	Electro Surgery Set	2	A	N	○	○	○	△	○	○	○	3
EXAMINATION / DIAGNOSTIC												
84	Electrocardiograph, Portable	3	B	R	○	○	○	△	○	○	○	2
85	Electrocardiograph 3ch	3	A	S	○	○	○	△	○	○	○	2
86	Spiro Analyzer	1	A	R	○	○	○	○	○	○	○	1
87	Diagnostic Ultrasound System	2	A	S	○	○	○	△	○	○	○	1
88	Portable Ultrasound Scanner	2	B	N	○	○	○	△	○	○	○	1
89	Universal Diagnostic Table (X-ray)	1	A	R	○	○	○	○	○	○	○	1
90	Panoramic X-ray Unit for Dental	2	A	R	○	○	△	○	○	○	○	2
91	Electroencephlograph	1	A	R	○	○	○	○	○	○	○	1
92	Digital Angiographic System	1	A	N	○	○	△	○	○	○	○	1
REHABILITATION / PHYSIOTHERAPY												
93	Hubbard Tank	1	B	N	○	○	△	○	○	○	○	1
94	Progressive Bathing System	1	B	N	×	○	○	○	○	○	×	0
95	Paraffin Bath for Arms and Legs	1	B	N	○	○	○	○	○	○	○	1
96	Low Frequency Therapy	1	B	S	○	○	○	○	○	○	○	1
97	Microwave Therapy Unit	1	B	S	○	○	○	○	○	○	○	1
98	Short-wave Therapy Unit	1	B	S	○	○	○	○	○	○	○	1
99	Ultrasound Therapy Unit	1	B	S	○	○	○	○	○	○	○	1
100	Ultraviolet Lamp	2	B	S	○	○	○	△	○	○	○	1
101	Ultraviolet and Infrared Lamp	2	B	S	○	○	△	△	○	○	○	1
102	Electric Traction	2	B	N	○	○	○	○	○	○	○	2
HOSPITAL EQUIPMENT												
103	High Pressure Steam Sterilizer	5	A	R	○	○	△	○	○	○	○	5
104	Hot Air Sterilizer	10	A	R	○	○	○	○	○	○	○	10
105	Automatic Water Distillation Apparatus	10	B	R	○	○	○	○	○	○	○	10
106	Burn Bath	2	B	N	○	○	○	○	○	○	○	2
107	Standby Generator	1	A	R	○	○	○	○	○	○	○	1
108	Oxygen Producing Equipment	1	B	N	○	○	○	○	×	○	×	0
109	Personal Computer Set	10	B	S	○	○	○	△	○	○	○	7
110	Ultrasonic Washer	1	A	R	○	○	○	○	○	○	○	1
111	Formalin Gas Sterilizer	1	A	N	○	○	○	○	○	○	○	1

Q'ty(A):Quantity of Request / Q'ty(B):On further investigation Quantity

(3) Procurement locally and from the third countries

To ensure that equipment can be properly maintained, it is vital that manufacturers have outlets or branches in neighboring countries such as Turkmenistan, central Asia, and Russia. At the same time, since Japanese products are not always available in the subject regions, the scope of equipment procurement under this plan has been widened to include products from the third countries (provided these satisfy the requirements) in addition to Japanese products. Medical equipment is not manufactured locally and local procurement is therefore not under consideration.

Chapter 3 Implementation Plan



Chapter 3 Implementation Plan

3-1 Implementation Plan

3-1-1 Implementation Concept

This project is to be carried out in accordance with the framework of the Japan's Grant Aid. The project will be formally carried out after it has been approved, and an Exchange of Note (E/N) has been executed, by both the Japanese and Turkmenistan governments. Once these formalities have been completed, a Japanese corporation will be selected as a consultant by the Turkmenistan government with recommendation of JICA (Japan International Cooperation Agency) and the project's detailed design work (D/D) will begin. Once D/D drawings and documents have been completed, equipment will be supplied and installed by equipment suppliers that are Japanese corporations and have been selected through competitive bidding.

The basic points and other points to be taken into consideration regarding the execution plan are as follows.

(1) Execution Structure

For this project, the Turkmenistan Ministry of Health (hereinafter called as MOH.) is the agency with ultimate authority. It will oversee the project. The entity that will execute the project is the Treatment and Consulting Center by President of Turkmenistan S. A. Niyazow.

(2) Consultant

Once the E/N has been executed by both governments, the Japanese consultant will promptly enter into a consulting service agreement with the MOH, in accordance with the procedures for Japanese Grant Aid. Pursuant to this agreement, which does not become effective until verified by the Japanese government, the consultant will perform the following services.

- 1) Detailed Design (D/D) Stage: Preparation of the D/D design specifications and other technical documents,
- 2) Bidding Stage: Operational cooperation related to selection of equipment suppliers and supply contracting, and
- 3) Procurement Stage: Supervision of equipment procurement work, installation, and guidance on operation and maintenance.

(3) Equipment Suppliers

Suppliers of equipment will be selected through bidding and enter into contracts with the Turkmenistan government. Pursuant to such contracts, which also do not become effective until verified by the Japanese government, suppliers will procure and transport and install the necessary equipment and provide technical training to the Turkmenistan side concerning, operation, and maintenance of the equipment procured. Suppliers will also establish maintenance networks that enable the Turkmenistan side to purchase spare parts and supplies and receive technical training after the equipment's delivery.

(4) Japan International Cooperation Agency (JICA)

The JICA's Grant Aid Project Management Department will advise the consultants and suppliers to ensure that the project is properly carried out in accordance with the grant aid system. As necessary, it will also confer with the project's core entities on the Turkmenistan side and expedite the project's execution.

(5) Implementation Planning

Regarding the implementation planning, during the D/D stage, the consultant and the parties involved in the project on the Turkmenistan side will confirm for each segment of implementation work the timing of the commencement, and the method of execution, of the work to be undertaken by the Japanese and Turkmenistan sides. They will also confer with each other in accordance with this report's execution schedule to ensure that the implementation work each side is obligated to perform proceeds smoothly. The preparation work that the Turkmenistan side is obligated to perform must be executed on schedule by the Turkmenistan side prior to commencement of equipment installation.

(6) Necessity of Dispatching Technical Personnel

Learning how to properly operate and maintain the procured equipment is extremely important to ensure that after installation it always functions normally and contributes to accurate diagnoses and treatment. Accordingly, for equipment relatively difficult to operate, such as X-ray equipment, it will be necessary for the manufacturer to dispatch technical personnel to direct the installation work, explain the equipment's handling, and provide training (instruction in operating techniques, simple repair techniques, method of checking equipment, and so on.).

(7) Execution Planning and Supervision

The consultant will perform the project's D/D and supervise the project. "D/D"

refer to setting detailed specifications for materials and equipment based on this Basic Design Study and preparing tender documents comprising tender instructions, proposed equipment supply contracts, and specifications for equipment. D/D also includes cost estimation required to procure equipment.

In terms of supervision, the consultant will confirm whether suppliers' duties are being executed in accordance with contract provisions. It will also confirm that contract provisions are performed properly. In addition, to expedite the project's execution, the consultant will guide, advise, and coordinate from an impartial standpoint. Supervision comprises the following duties.

- 1) Performing administrative procedures required for selection of equipment suppliers, conducting tendering, and witnessing the execution of contracts,
- 2) Examining and approving working drawings, equipment specifications, and other documents submitted by equipment suppliers,
- 3) Inspecting and approving the quality and performance of the equipment supplied,
- 4) Supervising equipment's supply, installation, and receiving inspection,
- 5) Reporting on the progress of implementation work, and
- 6) Witnessing delivery.

In addition to the above duties, the consultant will report to concerned Japanese government officials concerning the project's progress, payment procedures, completed deliveries, and other pertinent matters.

3-1-2 Important points with regards to installation work

- (1) Since the subject institution will be operating as usual during the installation of the equipment, the supplier will have a meeting with representatives from Turkmenistan side and work out detailed schedules beforehand, so as to minimize disruption to normal operations in the relevant departments.
- (2) The process of disposing of existing equipment and bringing in new equipment will in some cases require the temporary removal of fixtures such as windows and/or the removal of wall sections.
- (3) Since the specifications of existing water supply and waste piping, electric wiring, and the like do not match those used in Japan and Western European countries, the installation process will generate some additional work such as the processing of materials, to meet specifications of existing utilities and facilities.

3-1-3 Scope of Work

(1) Work to Be Undertaken by the Japanese Government

For this project, the Japanese side shall carry out the following duties related to consulting and equipment purveyance.

1) Consulting Services

- Preparation of D/D papers and tender instructions for the equipment included in the project
- Operational cooperation related to selecting and contracting with suppliers
- Supervision of equipment procurement work

2) Equipment Procurement and Installation

- Procurement of the equipment included in the project and their transport to their installation site
- Direction of the installation of the materials and equipment included in the project, and trial operation and adjustment of the equipment
- Explanation and guidance concerning methods of operating and maintaining the equipment included in the project
- A part of the construction work related to installation of equipment included in the project as stated below.

I. Generator Room Construction

- Lighting fixtures for maintenance use will be installed inside the generator room.

II. Preparation Work Incidental to Installation of Dental Treatment Unit (4 units)

- In the immediate vicinity of the unit, a 20A feed pipe (valve-capped) and 40A drain pipe (plug-capped) will be installed above the floor.

III. Preparation Work Incidental to Installation of Autoclave (5 units)

- In the immediate vicinity of the autoclave, a 20A feed pipe (valve-capped) will be installed.
- In the immediate vicinity of the autoclave, a 50A SGP drain (plug-capped) will be installed. A single drain will be used.
- In the immediate vicinity of the autoclave, a 50A SGP steam exhaust (plug-capped) will be installed. Steam will be released separately into the atmosphere.

IV. Preparation Work Incidental to Installation of Automatic Distillation Apparatus (10 units)

- In the immediate vicinity of the apparatus, a 20A feed pipe (valve-capped) and 50A drain pipe (plug-capped) will be installed.

V. Preparation Work Incidental to Installation of Endoscope Cleaner

- In the immediate vicinity of the washer, a 20A feed pipe (valve-capped) and 50A drain pipe (plug-capped) will be installed.

(2) Work to be Undertaken by the Turkmenistan Side

Of the work related to installation of the equipment included in the project and other duties, the Turkmenistan side will carry out all duties except those to be undertaken by the Japanese government. Specifically, the Turkmenistan side will prepare the installation locations for equipment and execute the construction work required to prepare the facilities for the equipment's installation (extension of wiring and plumbing to the installation location, installation of electrical outlets, and so on.). The main work to be executed for each equipment installation is as follows.

I. Generator Room Construction

- The generator room will have dimensions of 4000(W) x 6000(L) x 2500(H) and a 1600(W) x 2000(H) louvered door. A 1000(W) x 1000(H) louvered vent will be installed in one place, facing the opposite direction as the door. A 1500(W) x 3600(L) x 150(H) footing (steel reinforced) will be placed on the floor slab.
- Wiring will be installed up to the surgery ward and ICU system's circuit breakers' secondary side and switch panels.

II. Preparation Work Incidental to Installation of Dental Treatment Unit (4 units)

- In the immediate vicinity of the unit, a 1 ϕ x 220V x 1.5 KW power source will be installed.
- In the immediate vicinity of the compressor for the unit, a 1 ϕ x 220 V x 0.75 KW power source will be installed.

III. Preparation Work Incidental to Installation of X-Ray Equipment

- A power switch for the equipment will be installed on the operator's room side. The power supply capacity will be 3 ϕ x 380 V x 50 KVA. In addition, third class installation work will be carried out.

IV. Preparation Work Incidental to Installation of Hydrotherapy Equipment

- In the immediate vicinity of the tub, a 25A water feed pipe and 25A hot-water feed pipe (both valve-capped) and a 100A drain pipe (plug-capped) will be installed.
- In the immediate vicinity of the tub, a power switch panel will be installed. The power supply capacity will be 3 ϕ x 380 V x 5 KVA.

V. Preparation Work Incidental to Installation of Autoclave (5 units)

- In the immediate vicinity of the autoclave, a power switch panel will be installed. The power supply capacity will be 3 ϕ x 380 V x 21 KW.

VI. Preparation Work Incidental to Installation of Dry-Heat Sterilizers (10 units)

- In the immediate vicinity of the sterilizer, a 1 ϕ x 220 V x 1.4 KW power source will be installed.

VII. Preparation Work Incidental to Installation of Burn Bath (2 units)

- In the immediate vicinity of the bath, three 3 ϕ x 380 V x 0.5 KVA / 1 ϕ x 220V x 1.0 KVA power sources will be installed.
- In the immediate vicinity of the bath, a 25A water feed pipe and 25A hot-water feed pipe (both valve-capped) and a 100A drain pipe (plug-capped) will be installed.

VIII. Preparation Work Incidental to Installation of Automatic Distillation Apparatus (10 units)

- In the immediate vicinity of the apparatus, a power supply will be installed.

IX. Preparation Work Incidental to Installation of Endoscope Cleaner

- In the immediate vicinity of the cleaner, a 1 ϕ x 220V x 0.5 KVA power source will be installed.

3-1-4 Consultant Supervision

Pursuant to the Japanese government's guidelines for Grant Aid, the consultant will assemble a coherent project execution team and smoothly carry out the D/D, taking into consideration the intention behind the B/D.

[Implementation Supervision Guidelines]

- (1) The consultant shall maintain close liaison with the supervisory personnel of the concerned agencies in both countries and aim to complete the equipment of the

subject institution on schedule.

- (2) The consultant shall provide the parties involved in the implementation work with prompt and appropriate guidance and advice from an impartial standpoint.
- (3) The consultant shall provide appropriate guidance and advice concerning the management of equipment following its installation and delivery.
- (4) After confirming the completion of equipment installation and the performance of contract provisions, the consultant shall conclude its duties by witnessing the delivery of the equipment and obtaining the Turkmenistan side's acknowledgment of acceptance.

3-1-5 Procurement Plan

(1) Method of Selecting and Contracting with Suppliers

To be eligible to take part in the procurement of equipment, prospective suppliers must be a company of Japanese nationality, on either an individual or corporate basis. Competitive bidding open to the public will be held, and suppliers will be selected by evaluating the bids submitted.

The form of contract to be used is a blanket purchase contract with the equipment's model specified in the contract document. The supplier's duties pursuant to the contract include the supply, manufacture, and transport to the installation site of the contracted-for materials or equipment; direction of installation, adjustment, and trial operation; and all technical guidance pertaining to operation and maintenance.

(2) Procurement of Equipment

With respect to equipment procurement, from the perspective of cost-performance and placing priority on the objective, no distinction will be made between Japan and third-party countries. Accordingly, the consultant and concerned Turkmenistan authorities will define the range of procurable equipment as broadly as possible and investigate procuring optimal equipment, taking into consideration factors such as price and maintenance network. Because it cannot be said that Japanese-made goods have substantially penetrated the region in question, expanding the procurement range to encompass goods of third-country origin is appropriate in terms of ensuring the sustainability of the project.

The conditions that must be taken into consideration in the procurement of equipment for the project are as follows.

- 1) For equipment requiring periodic servicing or the like, or the purchase of consumable supplies, technicians must be readily available for service calls or supplies must be readily obtainable. For such equipment, the existence of an equipment agent in Central Asia, Turkey, Russia, or another nearby country is essential for proper operation.
- 2) Equipment must be able to be procured, transported to the subject institution, and installed by the time limit prescribed in the E/N.

Table 3-1 lists the equipment that require periodic servicing and consumable supplies.

Table 3-1 Equipment that Required of Maintenance Service

No.	Department	Equipment
5-1	ICU	Ventilator for Adult
5-2	ICU	Ventilator for Child
7	ICU	Infusion Pump
9	ICU	Syringe Pump
10	ICU	X-ray Mobile Unit
13	Operating Theater	Anesthesia Machine with Ventilator
16-1	Operating Theater	X-ray TV Mobile Unit
17	Operating Theater	X-ray Mobile Unit
44	Laboratory	Blood Coagulation Meter
45	Laboratory	Spectrophotometer
49	Laboratory	Electrolyte Analyzer
74-1	Diagnostic Examination	X-ray Diagnostic Table Unit
94	Diagnostic Examination	Angiography System
91	Service Equipment	Personal Computer Set

(3) Transport Method

- 1) Equipment procured from Japan will be transported by truck within Japan and shipped by sea from Japan to Port Bandar Abbas in Iran. From the said Port, it will be transported by truck and rail to the site in Ashkhabad.
- 2) Equipment procured from a third country will be transported directly from its manufacturer's plant to the site on the manufacturer's liability. Such shipments will not be consolidated en route with other equipment shipments.

3-1-6 Implementation Schedule

(1) Project Execution Schedule

After execution of the E/N, the time required to contract with suppliers and complete the other work to be performed by the Japanese side is approximately 11 months. The approximate time it will take to complete each of the steps entailed is as follows.

- 1) From execution of the E/N until bidding: 4.5 months
- 2) Until verification of contracts with suppliers and placement of orders: 1.0 months
- 3) Manufacture/procurement of equipment: 3.0 months
- 4) Transport: 1.5 months
- 5) Installation, adjustment, trial operation, and guidance concerning operation and maintenance: 1.0 months

Total: 11.0 months

(2) Implementation Schedule

Table 3-2 Implementation Schedule

Work Step		Year	1997										1998				
		Month	3	4	5	6	7	8	9	10	11	12	1	2	3		
Detailed Design	E/N	*															
	Consultant Agreement		*														
	Site study		■														
	Preparation of Tender Documents			□													
	Approval of Tender Documents					■											
	Public Notice of Tender					*											
	Tendering						*										
	Tender Evaluation							■									
	Supply Contract							*									
Equipment Procurement	Equipment Manufacture								□	□	□						
	Transport											□	□				
	Installation/Guidance													■	■		
	Completion															*	

■: Performed in Turkmenistan; □: Performed in Japan

3-1-7 Obligations of Recipient Country

The Turkmenistan government shall:

- (1) Provide documents and information required for the project,
- (2) Pay the service charges connected with Bank Arrangements (B/A) and authorizations to pay (A/P) to a Japanese bank that handles foreign exchange transactions,
- (3) Promptly unload the equipment supplied as Grant Aid at their port of entry, exempt them from taxes, process them through customs, and transport them within Turkmenistan,
- (4) Exempt the foreign staff involved in the project, whether from Japan or a third country, from taxes related to the procurement of equipment or services pursuant to a verified contract, including customs duties, domestic taxes, and all other taxes levied in Turkmenistan,
- (5) Provide the accommodation necessary for foreign staff, from Japan or a third country, involved in the procurement of equipment or services pursuant to a certified contract to enter and stay in Turkmenistan to perform their duties,
- (6) Issue or grant in accordance with the Turkmenistan government's laws the permits, qualifications, or other authorizations deemed necessary to execute the project,
- (7) Appropriate budget funds, and deploy personnel, adequate to properly and effectively use and maintain the equipment procured through the project,
- (8) Properly and effectively use and maintain the equipment supplied through the project, and
- (9) Assume liability for all expenses required to carry out the project that are not covered by Japanese Grant Aid.

3-2 Operation and Maintenance Plan

The MOH is presently striving to augment health-care funding and medical services pursuant to the Ten-Year Welfare Improvement Plan. As one measure to achieve this aim, the ministry has stated it will appropriate \$120 million annually to install modern equipment and purchase medical supplies. In implementing these policies, the MOH introduced a national drug insurance system as a new revenue source at the beginning of 1996 and concurrently began collecting insurance premiums. Further, the MOH is studying conversion to remunerated medical services, but it is proceeding cautiously with the introduction of such a system because medical services in Turkmenistan have heretofore been provided to citizens free of charge. For foreigners, medical facilities, including the subject institution, are already providing remunerated medical care.

The maintenance plan for this project will both indicate to the concerned Turkmen authorities the main equipment's operating and maintenance expenses and make recommendations for proper operation based on a financial analysis of the present state of affairs.

(1) The Subject Institution's Operational Status

The subject institution's revenues and expenses from 1993 to 1995 are itemized below. In terms of its revenue sources, budget allocations from the MOH account for nearly all its revenue; the amount of revenue derived from fees for medical care from foreigners is slight. The fiscal year is from January to December and revenue and expenditures are revised on a quarterly basis. At the end of the fiscal year, the institution submits a budget request for the following fiscal year to the MOH. If a deficit occurs during the fiscal year, the institution submits to the Health Minister a revised budget request accompanied by a statement of the grounds for the revision and the requested additional funds are granted. Consequently, revenues nearly correspond exactly to expenditures.

Table 3-3 : Itemization of Subject Institution's Revenues and Expenditures

(1,000 Manat)

Year	1992	1993	1994	1995	(%)
Total Revenue	60,065.2	2,788.9	28,399.2	276,447.9	100.0
From MOH (personnel expense)	18,764.4	900.5	8,642.3	81,843.8	29.6
From MOH (operating expenses)	41,300.8	1,634.9	17,409.4	177,843.0	64.3
Medical Care Revenue (including charges for testing and hospitalization)	-	163.0	1,645.0	5,794.8	2.1
Miscellaneous	-	90.5	702.5	10,966.3	4.0
Total Expenditures	48,893.8	2,535.1	29,047.2	262,748.0	100.0
Personnel Expense	18,581.9	895.9	8,725.3	53,826.0	20.5
Insurance / Pension Expense	5,206.2	410.4	2,709.7	22,433.5	8.5
Taxes	557.4	26.8	444.1	26,458.1	10.1
Material Costs (pharmaceuticals)	1,862.0	213.7	1,669.3	31,903.2	12.1
Material Costs (reagents / supplies for testing)	18.6	10.0	-	509.8	0.2
Material Costs (materials for medical care)	6,200.2	251.4	5,146.3	22,342.6	8.5
Material Costs (supplies for meals)	3,693.5	230.1	3,524.1	25,009.3	9.5
Maintenance Expense (plant, equipment, vehicles)	2,250.0	86.9	528.9	10,208.3	3.9
Capital Investment (plant, equipment, vehicles)	-	-	-	12,848.0	4.9
Utilities	3.6	3.3	310.0	4,308.2	1.6
Office Expense (telephone, printing, etc.)	0.6	0.5	31.0	968.1	0.4
Miscellaneous	10,519.8	406.1	5,958.5	51,932.9	19.8
Revenues less Expenditures	-11,171.4	253.8	-648.0	13,699.9	-

Note : 4,000 manat = 1US\$ (Source: Subject institution, 1996)

(2) Revenues

With over 90% of the annual budget funded by grants from the MOH, the subject institution is highly dependent on the MOH. While remunerated medical care to foreigners also generates revenue, this accounts for less than 5% of the budget and moreover, is not a stable source of revenue. Funding from the MOH has grown at an astronomical rate, by ten-fold from 1993 to 1994 and again from 1994 to 1995. This increase is considered to reflect the sharp drop in the exchange rate for the local currency, the manat, against the dollar. Accordingly, the actual rate of growth of the budget's purchasing power is low.

(3) Expenditures

1) Personnel Expense

Medical professionals' average monthly compensation is between \$20 and \$30. Although compensation increases yearly, it is said to be declining in real terms due to an inflation rate that far outstrips its rate of increase. Personnel expense accounts for approximately 20% of annual expenditures (actual 1995 data).

2) Pharmaceutical Expense

Pharmaceuticals are procured mainly from a state-owned pharmaceutical supply company (Turkmen Pharmatzia). However, anesthetic and other supplies are difficult to obtain other than through the aid of an international aid organization or the like.

3) Maintenance Expense

Maintenance expense, including that for facilities and medical equipment, amounts to a mere 4.1% of the budget and is the sum of "material costs (testing reagents and expendables)" and "cost of facilities, equipment, and vehicle maintenance" in Table 5, Income and Expenditure Breakdown for the Relevant Institution. Any maintenance is hardly performed at the moment because the state-owned maintenance company (Turkmen Med Tech-Service) has ceased to function.

(4) Matters to be Improved

The subject institution depends on the MOH's budget appropriations for 95% of the revenue for its operations, while its independently generated revenue accounts for just 5% (actual 1995 data). The new maintenance expenses that would be incurred if this project is carried out are tentatively calculated at around \$120,000 per year. In addition, annual maintenance would cost around US\$160,000 for a

new ICU, and around US\$45,000 for a nuclear magnetic resonance imaging (MRI) diagnostic apparatus, the MOH should secure new revenue sources. To run the subject institution properly, it is essential to implement concrete measures to provide the needed funds. Specific strategies such as increasing the budget allocation from the MOH, boosting self-generated income (for instance by charging local residents for medical care), and rationalizing operations to reduce expenditure, are vital in order to ensure that the subject institution can continue to function properly.

1) Improvement of Medical Care Revenues

Turkmenistan has a statute imposing medical-care fees on local residents too. While the subject institution has already set a (proposed) tariff of charges, it has yet to actually place the tariff into effect. For pharmaceutical purchases, an insurance system has been implemented and premiums are already being collected, amounting to about 4% of residents' income. It is advisable to do likewise for medical services as well. From the standpoint of sharing costs among beneficiaries, the MOH should aim to increase revenue at the subject institution by implementing remunerated medical care for local residents able to pay for it.

2) Review of Operating Expenses

Personnel expense's share of the subject institution's annual expenditures is approximately 20%. The MOH is proceeding with the rationalization of medical facilities in league with the WHO. At the subject institution, it scaled down the Surgery Department by 40 beds in July, 1996 and is promoting curtailment of patients' hospital stays. It is advisable to promote further reductions in personnel expense through rationalization (consolidation or scaling-down of departments, centralization of departments, and so on.), taking into consideration demand for medical care and other relevant factors.

The subject institution is in the process of establishing computerized medical information management systems through the cooperation of the UNDP, WHO, and others. For reducing expenses, it is advisable to use these systems to manage inventories and expiration dates of pharmaceuticals and supplies, thereby eliminating wasteful inventory.

(5) Financial Analysis

Financial analysis was conducted to forecast the future on the basis of two assumed scenarios. The analysis was based on the subject institution's operating

results for 1995 and basic indices such as the population growth rate and inflation rate.

1) Fundamental Parameters

① Population growth rate: 3.2% (Statistical data of Turkmenistan)

- Related variables: medical-care revenue, operating expenses

② Inflation: 20.0%

The inflation rate in Turkmenistan skyrocketed following independence and a period of price instability ensued, but prices have been gradually stabilizing since 1996. In this analysis of revenue and expenditures, the inflation rate was set at 20% and calculations were performed on the basis thereof.

- Related variables: operating budget, salaries, operating expenses

③ Period analyzed: 10-year period beginning in 1998 (Delivery of the equipment procured through this project is assumed to take place in 1998.)

2) Assumed Conditions

Each scenario's assumptions concerning hospital revenue are set forth below. Hypothetical medical-care unit prices and collection rates were set. Regarding expenditures, rationalization of staff size and inventory management were assumed.

① Assumptions Common to All Scenarios

- Patient increase rate: 3.2%/year (equal to the population growth rate.)

- Expenditure growth rate: 20.0%/year (equal to the inflation.)

- MOH's budget's growth rate: 20.0%/year (equal to the inflation.)

② Operating/Maintenance Expenses

According to tentative calculations by the Japanese side, the medical-equipment operating and maintenance expenditures that would be newly required as a result of this project's execution are around US\$ 627,000. The expenses are calculated based upon the main consumable supplies which are listed in the appendix-5.

3) Revenue and Expenditure Forecast

The revenue and expense forecasts for each scenario are as follows.

① Scenario 1

In scenario 1, revenues and expenditures were forecast based on the subject institution's actual 1995 operating results in the case that the institution

continues to operate under its current system of not collecting fees for medical care. However, natural variations due to population growth and inflation, and improvements in diagnostic and therapeutic efficiency resulting from utilization of the equipment procured through this project were each taken into consideration in projecting revenues and expenditures.

a) Assumed Conditions

Increases in patients concomitant with population growth, and increases in expenditures and the MOH's budget concomitant with inflation were taken into consideration. In addition, medical-care fees from foreigners were projected to double as a result of utilization of the equipment procured through this project.

b) Results

As shown in Appendix 6. Financial Analysis Data Scenario 1, if the subject institution continues to operate at the present situation, major deficits would occur from the first year. Hence, the MOH would have to make up for the shortfalls.

② Scenario 2

In scenario 2, on top of scenario 1's assumed conditions, a list of remunerated-medical-care categories is established and remunerated medical care is introduced for local residents. In addition, the hospital strives to reduce personnel expenses through operational reform.

a) Assumed Conditions

- Medical Fee Collection Rate: For the remunerated-medical-care categories, hypothetical unit prices and numbers of patients were set and the collection rate was set at 30%.

- Remunerated Medical Care Categories:

[1] Hospitalization (Medical Care/Day) Charges

(1) ICU:	16,860 manat/case
(2) Oral surgery:	7,050 manat/case
(3) Pediatrics:	8,370 manat/case
(4) Otolaryngology:	8,380 manat/case
(5) Pediatric otorhinology:	7,360 manat/case
(6) Gastroenterology:	5,330 manat/case
(7) Neurology:	6,130 manat/case

(8) Nephrology:	4,600 manat/case
(9) Transplant surgery/recovery:	14,760 manat/case
(10) Urology:	7,600 manat/case
(11) Artificial hemodialysis:	18,630 manat/case
(12) Endocrinology:	8,370 manat/case
(13) Endocrine surgery:	6,120 manat/case
(14) Hepatic, pancreatic, or bile-drainage surgery:	6,770 manat/case
(15) Burn care:	10,380 manat/case

(Note: Average length of hospitalization: 13.2 days)

[2] Outpatient Examination Charges

(1) Otorhinology:	1,040 manat/case
(2) Hematological testing:	1,010 manat/case
(3) Microbiological testing:	640 manat/case
(4) Electrocardiograph examination:	1,270 manat/case
(5) Electrocardiograph examination and hematological testing:	1,800 manat/case
(6) Rehabilitation:	700 manat/case
(7) Endoscopy:	1,900 manat/case
(8) Dentistry:	1,500 manat/case
(9) Radiology:	2,000 manat/case
(10) Physical therapy:	660 manat/case
(11) Psychosomatic disorders:	700 manat/case
(12) Reflex therapy:	590 manat/case
(13) Massage:	570 manat/case
(14) Intestinal cleansing:	510 manat/case
(15) Inhalation:	610 manat/case
(16) Dry-air chamber treatment:	1,100 manat/case
(17) Swimming attend:	1,200 manat/case
(18) Kinesi therapy:	610 manat/case
(19) Ultrasonography:	2,000 manat/case
(20) High-pressure oxygen treatment:	3,450 manat/case
(21) Acupuncture:	2,500 manat/case

b) Results

As the table on Appendix 6. Financial Analysis Data Scenario 2 indicates, even if the collection rate is raised in stages and remunerated medical-care

categories are established, revenue from medical care would account for a 26% (year 1998) of the annual budget. The hospital's expenditures would exceed its revenues unless the MOH provides supplemental funding. In this scenario, the collection rate was assumed to be a uniform 30%. It would not be realistic to assume that hospital revenues could be increased further by, for example, raising medical-care unit prices or improving the medical-fee collection rate to around 80%, because in light of current economic conditions, the resultant financial burden on local residents would be excessive. Consequently, in terms of the means of paying for the increased maintenance expenses that would be incurred as a result of this project, it seems that the MOH has no alternative but to depend on subsidies from the national treasury until such time that it introduces medical insurance or otherwise secures a new revenue source.

4) Overall Results

On the basis of the above case studies, measures such as improving the remuneration rate for medical care or instituting new categories of remunerated medical care would prove insufficient to improve the hospitals current revenue/expenditure balance. Further, in light of current economic conditions in Turkmenistan, the population from which fees for medical care can be collected is limited. Accordingly, converting to a system of remunerated health care would not be easy.

At present, what the subject institution can do to improve its operations is to formulate, based on its current revenue/expenditure balance, a long-term management plan as a hospital, revise its personnel plan based on this long-term plan, and rationalize its operations, such as by effectively managing inventory and reducing consultation hours and the length of hospital stays.

However, the cost savings resulting from such rationalization by the subject institution would be slight in comparison to the size of its operating budget. Consequently, if this project is carried out, there would be no alternative but to rely on increased budget allocations from the MOH to cover the expenses required to maintain the newly installed equipment until such a new funding source as a medical insurance is established. For example, it is desirable to use some of the funds provided by the World Bank under an initiative to Health Reform in order to defray the maintenance cost which will be generated under this plan.

Table 3-4 on the next page shows the ratio of revenue to expenditure for individual medical treatment items in each scenario.

Table 3-4 : Ratio of Revenue to Expenditure for Individual
Medical Treatment Items in Each Scenario

	1995	Scenario 1		Scenario 2	
<REVENUE>	results	1998	2007	1998	2007
I. From Ministry of Health					
Personnel Expense	29.60	29.00	29.00	22.34	21.26
Operating Expense	64.33	63.01	63.01	48.55	46.20
SUB TOTAL	93.93	92.01	92.01	70.89	67.46
II. Medical Care Revenue					
(Foreigner)	2.10	4.11	4.11	3.16	3.01
(Residents) Hospital Charges	-	-	-	7.43	7.07
Exam. by Microscope	-	-	-	0.24	0.30
Blood Test	-	-	-	12.81	16.18
Microbiological Test	-	-	-	1.08	1.37
Exam. by X-ray	-	-	-	1.29	1.63
Exam. by Ultrasound	-	-	-	0.10	0.13
SUB TOTAL	2.10	4.11	4.11	26.11	29.69
III. Miscellaneous	3.97	3.88	3.88	2.99	2.85
TOTAL REVENUE	100.00	100.00	100.00	100.00	100.00
<EXPENDITURES>					
I. Personnel Expense	20.48	4.85	2.59	4.85	2.59
II. Insurance/Pension Expense/Taxes	18.61	4.40	2.36	4.40	2.36
III. Material Costs					
Pharmaceuticals	12.14	3.16	2.24	3.16	2.24
Materials for Medical Care	8.50	2.21	1.57	2.21	1.57
Supplies for Meals	9.52	2.47	1.76	2.47	1.76
Capital Investment	4.89	1.16	0.62	1.16	0.62
Utilities	1.64	0.39	0.21	0.39	0.21
Miscellaneous	19.77	4.68	2.50	4.68	2.50
SUB TOTAL	56.46	14.07	8.90	14.07	8.90
IV. Office Expense	0.37	0.09	0.05	0.09	0.05
V. Maintenance Expense					
Equipment/Plant/ Vehicles (now on use)	4.08	1.06	0.75	1.06	0.75
Equipment by Japan Grant Aid	-	66.05	59.50	66.05	59.50
MRI Equipment	-	9.48	6.73	9.48	6.73
New ICU Equipment	-	-	19.12	-	19.12
SUB TOTAL	4.08	76.59	86.10	76.59	86.10
TOTAL EXPENDITURES	100.00	100.00	100.00	100.00	100.00

(6) Establishment of Maintenance Network

This project's primary objective in equipping the subject institution is to replace existing general equipment that has broken down due to decrepitude. This replacement equipment is expected to pose few maintenance problems if routine checks and servicing are performed properly. Technical problems may conceivably arise, however, with respect to the maintenance of some of the relatively complicated equipment being installed for the first time. Accordingly, in procuring of such equipment, it is necessary to newly establish maintenance and technical support networks in cooperation with the Turkmen Med-Tech Service. Specifically, networks are planned whereby the subject institution would be able to receive technician's advice, data, replacement parts, and maintenance service from the agents of the procured equipment, and the equipment's users would be able to receive training as necessary from its manufacturers.

As mentioned earlier, most of the equipment in this plan will be used to upgrade existing equipment. There should therefore be no need to increase the number of medical personnel. The estimated increase in maintenance costs required to ensure proper operation of the equipment is around US\$414,000 (13.45 million yen) per annum. The total increase in maintenance costs, including that associated with the new ICU and MRI equipment provided for under the Israeli plan, would be around US\$627,000 (69 million yen).

Savings through improved hospital management will not be sufficient to cover this increase in maintenance costs. The MOH is studying the feasibility of using a portion of funds received from the World Bank under the "Health Reform." This financing would enable initial procurement of US\$10 million (out of a total US\$40 - 50 million), equivalent to around 3.3% of the increase in the annual maintenance costs, or around 36 million yen at the subject institution .

Med Technica, the government corporation responsible for maintenance of medical equipment in Turkmenistan (operating under the jurisdiction of the MOH), has largely ceased to function as economic disruption following the collapse of the former Soviet Union has rendered replacement parts virtually impossible to obtain.

Med Technica was overhauled and restructured by the MOH to create Turkmen Med Tech-Service in October 1996. The new corporation has exchanged contracts with the subject institution regarding permanent stationing of maintenance technicians there from early 1997.

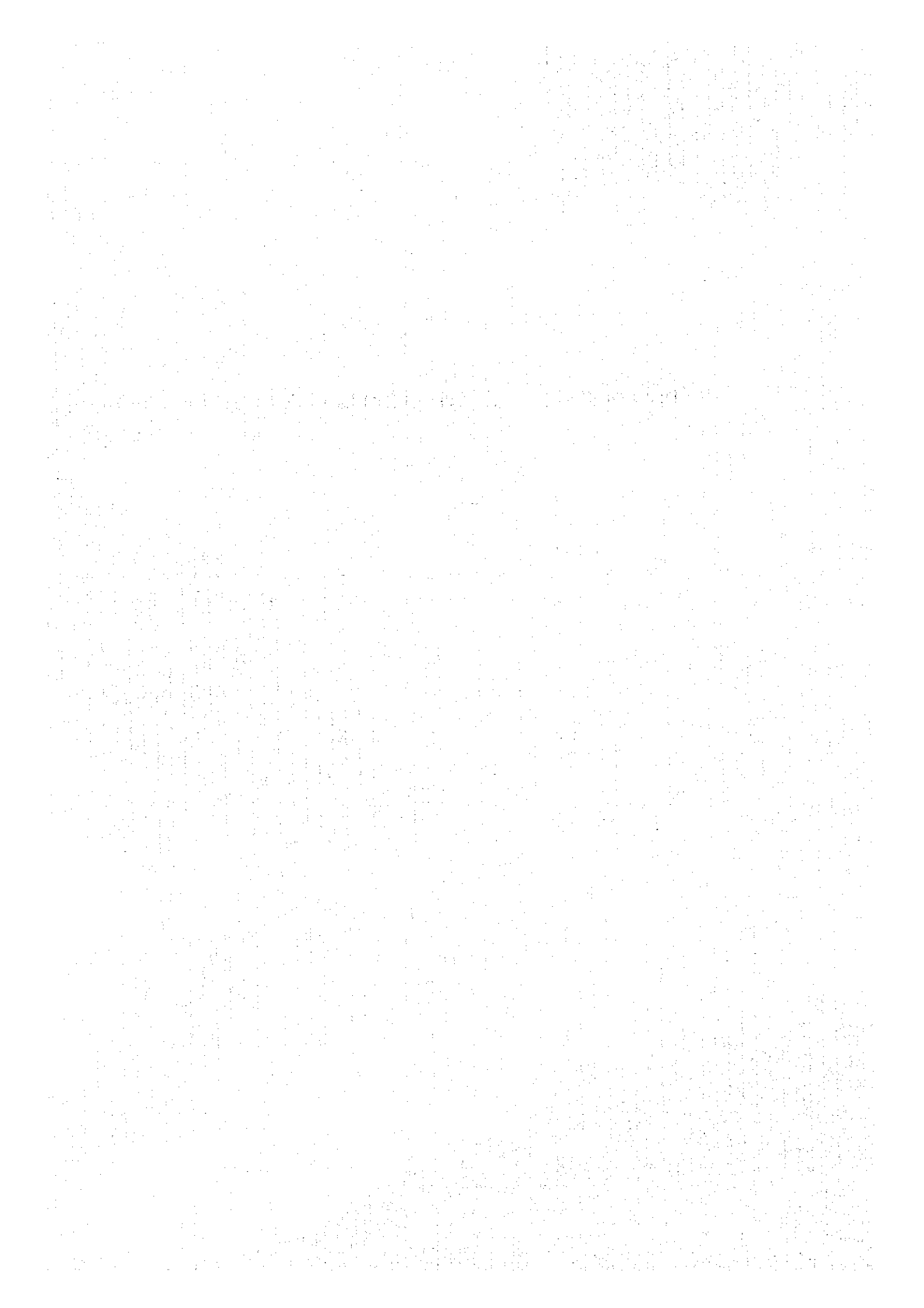
Although it is directly responsible for maintenance, Turkmen Med Tech-Service possesses only the most basic repair tools and measuring devices, which are inadequate for more advanced equipment such as radiation apparatus. Nevertheless, for standard and mechanical equipment, which constitutes the

majority, conventional technology is sufficient to carry out daily maintenance and simple repair work, provided that technical materials such as instruction manuals with circuit diagrams are available.

Meanwhile, engineers dispatched mainly from Israel to work with the ICU in the subject institution under a MOH development program are providing technical training for medical personnel and maintenance technicians. In addition, two or three German manufacturers of medical equipment are currently setting up local outlets, which will from 1997 be offering maintenance services for analysis devices, as well as relatively advanced diagnostic equipment including MRI, or nuclear magnetic resonance imaging diagnostic apparatus and X-ray machines.

Thus, Turkmenistan side is steadily acquiring the capacity to handle at the local level the task of checking and maintaining the equipment set out in this plan. It is thought that the overall structure will be in place by the time the equipment itself is actually installed.

Chapter 4 Project Evaluation and Recommendation



Chapter 4 Project Evaluation and Recommendation

4-1 Project Effect

4-1-1 Method of Verifying Adequacy

(1) Improvement of Testing Functions

- 1) Replacement of testing equipment will enable emergency testing to be performed at the subject institution in addition to ordinary testing. Hence, it will be possible to promote an increase in testing cases and improvement of diagnostic accuracy.
- 2) Replacement of radiological diagnostic equipment will enable clear, high-quality images to be obtained, resulting in improvement of basic diagnostic functions at the subject institution and an increase in X-ray cases.

(2) Improvement of Therapeutic Functions

- 1) Procurement of surgical equipment and instruments will improve operating rooms' operating frequency, making it possible to meet the demand for surgery. It will result in an increase in surgery cases and improvement in surgical methods.
- 2) Therapeutic functions can be expected to improve in quality. For instance, the procurement of monitors will enable patients' condition to be accurately ascertained, and reliable sterilization will greatly contribute to prevention of secondary infection.
- 3) Procurement of rehabilitation and physical-therapy equipment will improve ancillary therapeutic functions and make it possible to strive to shorten patients' hospital stays.

(3) Improvement of Sterilization Function

Replacement and supplementation of washing and sterilization equipment will result in greater efficiency in sterilization of surgical equipment and instruments, both quantitatively and qualitatively. It will also contribute to improving operating rooms' operating frequency and preventing nosocomial infection.

4-1-2 Effect of the Project's Implementation

The subject institution's acquirement of diagnostic and therapeutic functions

befitting a third-level medical institution will contribute to the attainment of one of the Turkmen Ten-Year Welfare Improvement Plan's targets--namely, improvement of the quality of medical services.

This project can be expected to improve medical services by replacing and supplementing the equipment of each of the institution's medical departments. Moreover, augmentation of medical services will lay a foundation for conversion to remunerated medical care based on a system of patients' paying for the medical care they receive, the introduction of which is planned for the future.

The implementation of this project can be expected to directly result in major beneficial effects for recipients of the subject institution's medical services. It can also be expected to indirectly benefit residents of the areas surrounding the subordinate medical facilities under the subject institution's supervision or guidance.

In concrete terms, the nature of these beneficial effects is as follows.

(1) Improvement of Testing and Diagnostic Functions

Specific examples of improvements include the following: the procurement of semi-automatic blood testing equipment will result in greater accuracy of tests; the new procurement of endoscopes that were lacking will improve diagnostic accuracy; the replacement of electrocardiographs, electroencephalographs, and other such equipment will improve the accuracy of physiological testing functions; and the replacement of X-ray diagnostic equipment will make it possible to meet the demand for X-ray diagnoses. As a result of such comprehensive improvement of the subject institution's testing and diagnostic functions, the subject institution will possess testing and diagnostic functions befitting a top-referral center located in the capital.

(2) Improvement of Therapeutic Functions

The replacement and supplementation of anesthesia machines, electrosurgical unit, surgical forceps and other surgical equipment and instruments will improve the operating rooms' operating frequency. In addition, the procurement of ICU equipment will enable promotion of patients' early recovery. Likewise, in the rehabilitation and physical-therapy departments, the project can be expected to expedite patients' functional recovery by enabling physical- and exercise-therapy to be administered effectively. The above improvements can be expected not only to enable the subject institution to meet current demand for surgery but also to lead to an increase in surgery cases in the future. Hence, the project can be expected to enhance the function of accommodating referrals from subordinate medical facilities, a function the subject institution is expected to fulfill.

(3) Improvement of Material Sterilization Function

With nearly all the existing high-pressure steam sterilizers either prone to breakdown or decrepit, sterilization efficiency is markedly diminished. The replacement and supplementation of sterilizers and new procurement of washers will enable efficient sterilization of forceps and other surgical equipment and instruments, making it possible for the subject institution to meet demand for surgery. By thus improving sterilization function, the subject institution will be able to not only meet the demand for surgery imposed on a top-referral center but also promote prevention of nosocomial infection, which is one of its priority targets.

(4) Improvement of Educational Functions

The procurement of endoscopic television systems and other educational equipment will improve the subject institution's educational functions. The subject institution accepts physicians, nurses, and other medical personnel from subordinate medical facilities to train them. Improvement of its educational functions will promote dissemination of medical techniques and contribute to qualitative improvement of medical services.

4-2 Recommendation

We would like to recommend the following measures as policies to ensure that the subject institution utilizes to the utmost the equipment procured through this project and to promote the improvement of diagnostic functions and fiscal management.

(1) Issues and Recommendations Related to Improving Fiscal Management

- 1) It is necessary to accurately ascertain the state of monthly revenues and expenditures and formulate appropriate financial and funding plans. Moreover, the subject institution should continually reassess whether its balance of revenues versus expenditures is appropriate, and confer with the MOH regarding assurance of a budget for reagent procurement, foreign currency allocations, and other such matters. In formulating such plans, it is advisable to provide for a sinking fund to replace equipment in accordance with its useful life and cumulative deterioration.
- 2) A law authorizing a system of remunerated medical care has already been enacted, but there is no prospect of its becoming effective in the near future. The MOH should establish a feasible medical-care remuneration system, giving further consideration to imposing fees on low-income residents. It must also promote the subject institution's economic self-sufficiency through fee collection or other appropriate means.
- 3) The subject institution is striving to rationalize its operations in cooperation with the WHO. As stated above, the subject institution cannot operate unless the MOH continues its budget appropriations, which primarily cover personnel expenses. The subject institution should promote further reductions in personnel expenses and other costs by periodically conferring with the MOH.

(2) Issues and Recommendations Concerning Enhancement of the Subject Institution's Organization

Presently the subject institution is striving to improve management of medical statistics and enhance its patient information (records of patients' hospital visits, medical histories, and so on.) management system through the WHO-led Health Information System Establishment Program. This program aims to enhance health-information processing functions through computerization.

As the next step, it is advisable for the Central Administration Department to

ascertain the operating status of each medical department and strive to improve diagnostic and therapeutic efficiency so as to enable each department to constantly keep abreast of patients' prognoses and provide appropriate medical services. Toward that end, it is desirable to directly link each medical department's information to the Central Administration Department and to strengthen operational management.

(3) Issues and Recommendations Concerning Maintenance Control

- 1) To more effectively maintain medical equipment, it is necessary to promote enhancement of the maintenance system. As a concrete method of doing so, place a department in charge of equipment maintenance on hospital premises. This department will handle all maintenance-related duties, including management of inventories of consumable supplies and replacement parts, control of records of repairs and periodic inspections, and control of service manuals, operation manuals, and other documentation.
- 2) Through medical equipment agents and various training programs sponsored by the MOH, elevate skill levels by continually training in-house maintenance technicians.

(4) Issues and Recommendations Concerning Environmental Measures

At present, the subject institution's medical wastes are being transported to the city dump without being separated from general wastes. Under these conditions, it is not sufficient enough to prevent secondary infection from occurring due to a hazardous infectious source that was disposed of untreated. It is advisable for the Turkmenistan side to reform recognition on environmental measures and to sort its waste on premises and thoroughly disinfect, sterilize, or otherwise more appropriately treat infectious waste.

(5) Issues and Recommendations Concerning Monitoring

Once this project has been carried out, the Japanese government should verify and evaluate the effect of its implementation. The verification and evaluation methods are set forth below. We have compiled these evaluation indexes on a monitoring form, which is attached hereto as Appendix 7.

- 1) As a means of verifying and evaluating the effect of the project's implementation, the subject institution will periodically report to the MOH concerning equipment's

operating status, trends in the number of surgical cases and tests performed, and other matters.

- 2) The MOH will submit the subject institution's reports to Japan after verifying their content. The proper channel for submitting the reports to the Japanese government is by way of the Japanese embassy in Russia, the scope of whose authority also includes Turkmenistan.

Appendices

1. Member List of Survey Team

1. Member List of the Survey Team

[Basic Design Study]

1. Leader	Mr. N. TSUTSUMI	Assistant Director, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs
2. Technical Advisor	Dr. T. SHIMIZU	Bureau of International Cooperation, International Medical Center of Japan, Ministry of Health and Welfare
3. Project Coordinator	Mr. E. NARITA	First Project Study Division Grant Aid Project Study Department Japan International Cooperation Agency(JICA)
4. Project Manager / Operation & maintenance planner	Mr. R. HARADA	International Total Engineering Corporation (ITEC)
5. Equipment Planner	Mr. Y. FURUYA	International Total Engineering Corporation (ITEC)
6. Facility Planner	Mr. E. YAHAGI	International Total Engineering Corporation (ITEC)
7. Procurement Planner / Cost Estimator	Mr. T. SAITO	International Total Engineering Corporation (ITEC)
8. Interpreter	Mr. E. GOTO	International Total Engineering Corporation (ITEC)

[Consultation on Draft Final Report]

1. Leader	Mr. H. SHIMONO	Assistant Director, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs
2. Technical Advisor	Dr. T. SHIMIZU	Bureau of International Cooperation, International Medical Center of Japan, Ministry of Health and Welfare
3. Project Manager / Operation & maintenance planner	Mr. R. HARADA	International Total Engineering Corporation (ITEC)
4. Equipment Planner	Mr. Y. FURUYA	International Total Engineering Corporation (ITEC)
5. Facility Planner	Mr. E. YAHAGI	International Total Engineering Corporation (ITEC)
6. Interpreter	Mr. E. GOTO	International Total Engineering Corporation (ITEC)

2. Survey Schedule

2. Survey Schedule (Basic Design Study)

Member (Period)	Government Member	Project Manager	Equipment Planner	Facility Planner	Procurement Planner / Cost Estimator
Date	(13 days)	Mr. HARADA (28 days)	Mr. FURUYA (28 days)	Mr. YAHAGI (18 days)	Mr. SAITO (22 days)
1 Oct. 13 Sun		Lv. Narita (10:45/LH711) → Ar. Frankfurt (15:35)			
2 Oct. 14 Mon		Lv. Frankfurt (13:50/LH2956) →			
3 Oct. 15 Tue		→ Ar. Ashkhabad (0:45) Courtesy call to Ministry of Health & Medical Industry and the NIYAZOW Treatment and Consulting Center			
4 Oct. 16 Wed		Meeting and discussions with the NIYAZOW Treatment and Consulting Center. Confirmation and Explanation of Inception Report and Questionnaires.			
5 Oct. 17 Thu		Survey of the Hospital			Lv. Ashkhabad (15:50/HY) →Ar. Tashkent(18:20) Lv. Tashkent (20:25/HY49) →Ar. Almaty (23:55)
6 Oct. 18 Fri		Discussions of answers for Questionnaire	Survey of Equipment	Survey of Facilities	Local agent survey in Almaty
7 Oct. 19 Sat		Discussions of answers for Questionnaire	Survey of Equipment	Survey of Facilities	Study of price quotation and relevant data
8 Oct. 20 Sun	Lv. Narita (10:45/LH711) →Ar. Frankfurt (15:35)	Team Meeting / Study of Data			Lv. Almaty (8:00/UN206) →Ar. Moscow (9:30)
9 Oct. 21 Mon	Lv. Frankfurt (13:50/LH2956)→	Discussions on answers of Questionnaire	Survey of Equipment	Survey of Facilities	Local agent survey in Moscow
10 Oct. 22 Tue	→Ar. Ashkhabad (0:45) Courtesy call on Ministry of Health & Medical Industry, Team Meeting, Confirmation of Schedule		Survey of Equipment	Survey of Facilities	Local agent survey in Moscow
11 Oct. 23 Wed		Courtesy call on Ministry for Foreign Economic Relation, Survey of Hospital Survey of PIRAGOVA Hospital and Turkmen-Med-Tech-Sales			Local agent survey in Moscow
12 Oct. 24 Thu		Attendance for the Opening Ceremony of New ICU Department, Team Meeting Site Survey and Discussion of Requested and Additional Equipment			Local agent survey in Moscow
13 Oct. 25 Fri		Discussions for "Minutes of Discussions" in Hospital Survey of Scientific Mother and Child Care Institute			Local agent survey in Moscow
14 Oct. 26 Sat		Discussions for "Minutes of Discussions" in Ministry of Health & Medical Industry Signing of "Minutes of Discussions", Reporting of the Hospital Survey Result			Study of price quotation
15 Oct. 27 Sun		Team Meeting / Study of Data			Study of price quotation
16 Oct. 28 Mon	Study of Data	Study of Data and Answers for Questionnaire			Local agent survey in Moscow
17 Oct. 29 Tue	Lv. Ashkhabad (9:00/TK603) →Ar. Istanbul (10:30)	Courtesy call to WHO / UNDP / UNFPA	Discussions on Equipment	Lv. Ashkhabad (3:30/LH) →Ar. Frankfurt (7:30) Lv. Frankfurt → (20:50/JL408)	Lv. Moscow (7:05/LH3213) →Ar. Frankfurt (8:25) Lv. Frankfurt(12:45/LH3816) →Ar. Istanbul (16:45)
18 Oct. 30 Wed	Lv. Istanbul (10:25/TK6) →Ar. Moscow (14:35)	Courtesy call to UNICEF / WB	Discussions on Equipment	→Ar. Narita (16:10)	Local agent survey in Istanbul

2. Survey Schedule (Basic Design Study)

Member (Period)	Government Member	Project Manager	Equipment Planner	Facility Planner	Procurement Planner / Cost Estimator
Date	(13 days)	Mr. HARADA (28 days)	Mr. FURUYA (28 days)	Mr. YAHAGI (18 days)	Mr. SAITO (22 days)
19 Oct. 31 Thu	Courtesy call and Reporting to Embassy of Japan Lv. Moscow → (18:45/JL444)	Survey of Ashkhabad Central Blood Center and Medical Diagnostic Center			Local agent survey in Istanbul
20 Nov. 1 Fri	→Ar. Narita (9:00)	Courtesy call to USAID	Cost Estimation of Preperation Work		Local agent survey in Istanbul
21 Nov. 2 Sat		Study of Data and Answers for Questionnaire			Lv. Istanbul (14:00/LH3803) →Ar. Frankfurt (16:15) Lv. Frankfurt → (20:50/JL408)
22 Nov. 3 Sun		Team Meeting / Study of Data			→Ar. Narita (16:10)
23 Nov. 4 Mon		Survey of Turkmen Med-Tech-Sales Discussion of Answers for Questionnaire			
24 Nov. 5 Tue		Courtesy call to EU / Germany Embassy	Discussions with directors Survey of Maintenance Department		
25 Nov. 6 Wed		Discussion of Answers at MOH	Survey of Local Agent		
26 Nov. 7 Thu		Reporting to the MOH			
27 Nov. 8 Fri		Lv. Ashkhabat (3:30/LH2957) →Ar. Frankfurt (7:30) Meeting with Manufacturers Lv. Frankfurt (20:50/JL408) →			
28 Nov. 9 Sat		→Ar. Narita (16:10)			

2. Survey Schedule (Consultation on Draft Final Report)

Member (Period)	Government Member (13 days)	Project Manager Mr. HARADA (13 days)	Equipment Planner Mr. FURUYA (13 days)	Facility Planner Mr. YAHAGI (13 days)
Date				
1 Jan. 19 Sun	Lv. Narita (10:50/LH711) → Ar. Frankfurt (15:00)			
2 Jan. 20 Mon	Lv. Frankfurt (13:30/LH2956) → Ashkhabad			
3 Jan. 21 Tue	→ Ashkhabad (1:00/LH2956) Courtesy Call to NIYAZOW Treatment and Consulting Center Confirmation of Schedule			
4 Jan. 22 Wed	Explaining of a Draft Basic Design Report of the Project			
5 Jan. 23 Thu	Courtesy Call and Survey of PIRAGOVA Hospital Explaining of a Draft Basic Design Report (NIYAZOW Hospital)			
6 Jan. 24 Fri	Courtesy Call to Ministry for Foreign Economic Relations Explaining of a Draft Basic Design Report and Discussions for "Minutes of Discussions" (NIYAZOW Hospital)			
7 Jan. 25 Sat	Site Survey and Facility Study (NIYAZOW Hospital) Team Meeting / Study of Data			
8 Jan. 26 Sun	Team Meeting / Study of Data			
9 Jan. 27 Mon	Courtesy Call to Ministry of Health and Industry, Discussion of "Minutes of Discussions" Signing of "Minutes of Discussions". Reporting to Ministry of Health & Medical Industry and			
10 Jan. 28 Tue	Lv. Ashkhabad (9:00/TK603) → Ar. Istanbul (10:30) Team Meeting / Study of Data			
11 Jan. 29 Wed	Lv. Istanbul (10:25/TK613) → Ar. Moscow (14:35) Team Meeting / Study of Data			
12 Jan. 30 Thu	Courtesy call and Reporting to Embassy of Japan in Russia Lv. Moscow (19:25/JL444) → Ar. Narita			
13 Jan. 31 Fri	→ Ar. Narita (11:00)			

3. List of Parly Concerned in the Recipient Country

3. List of Parly Concerned in the Recipient Country

(Position)	(Name)
Ministry of Health & Medical Industry	
Minister:	Kuliev Chari Taganovich
Vice Minister:	Vladimir Sobolev Alekseyevich
Director of Introduction of New Technology dept.:	Nekrazov Pavel
Director of External Economic Activity Dept.:	Toijanova Arazugul Kadirovna
Secretary of Minister:	Akiniyazov Batyr
Ministry of Foreign Economic Relation	
Minister:	Prof. Orazov Mered
Vice Minister:	Myratrliev Shnazar Haklievich
Director of Regulations for Economic Activity dept.:	Jepbar T. Durdyev
Director of Ceremony and Translation Dept.:	Allobov Bailam
The Treatment and Consulling Center by S. A. Niyazow	
Director:	Bairamov Serdar Babakaryevich
Deputy Director:	Mamedov Hudayberdi
Chief Dr. of Dept. of Anesthesia and ICU:	Aitmamedov Musa
Deputy Chief of Laboratory:	Muzafarova Adelya
Deputy Chief of Polyclinic:	Atkekova nurjaghan Yagmurovna
Chief Dr. of Surgery Dept.:	Chariev Amangeldy
Chief Dr. of Liver and Pancrea Surgery Dept.:	Nurliev Mukhammed
	Chariev Bazargeldy Lolaevich
Chief Dr. of Burn Surgery:	Kakajanov Aman
Chief Dr. of Central Neurology Dept.:	Almazova Zokhre
Chief Dr. of General Neurology:	Yazlakova Gulshirin Agalierva
Chief Dr. of Plastic Surgery / Orthopedics Dept.:	Matnepesov Sapargeldy Orunbaevich
Chief Dr. of Physiotherapy Dept.:	Maximov Albert Anatolyevich

(Position)	(Name)
Deputy Chief Dr. of Central Admin.:	Jumaklieva Dilaram Kurbanovna
Chief Dr. of Oral Surgery Dept.:	Batirova Girzel Amanovna
Chief Dr. of Endocrine Dept.:	Allakova Jamilya Kulievna
Chief Dr. of Nephrology Dept.:	Fadeeva Lyukov Nikolaevna
Deputy Chief Dr. of Pediatrics Dept.:	Velbaeva Aina Shamuradbna
Chief Dr. of Endoscopy Dept.:	Panyatov Oleg
Chief Engineer of Maintenance Dept.:	Alexey
Deputy Chief Accountant:	Sorokina Vera Aleksandrovna

Pirogov Memorial Hospital

Director:	Dr. Gadamov Gurvan
Angiography, Radiography Dept.:	Dr. Seitmukhamedov Murad
CT Dept.:	Dr. Annaev Ata Durdievich

Maternal and Child Health Research Center

Deputy Director:	Dr. Ezizgeldy A. KHELLENOV
Obstetrics Dept.:	Dr. Godjaeva Girzel

Turkmen Med-Tech Service

Director:	Myratlyew Syhnazar Haklyewic
Chief Engineer:	Akuriyev Murad Akmamedovich

Central Blood Transfusion Center in Ashkhabad

Director:	Kurbanova Aidtamal Orazovia
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International Aid Agencies

World Bank

Liason Officer:	Kurbanova Guljahan
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WHO

Resident Program Officer:	Zahide Kochadag
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UNDP

Resident Coordinator, Representative of UN Resident:	Omer Ertur
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Junior Professional Officer:	Norimasa Shimomura
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UNICEF

Chief Representative:	Serap Maktab
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(Position)	(Name)
USAID	
Director:	Joanne Cotter
European Union (EU)	
Chief Representative:	Jaap Sprey
Project Manager:	J. Stuart Ballard
Embassy of Germany in Turkmenistan	
Secretary in charge of Culture and Public Information:	Herr Muller
Embassy of Japan in Russia	
Minister:	Kyoji Komachi
Second Secretary:	Tokuro Furuya
Third Secretary:	Takaaki Kato

4. Equipment List

4. Equipment List

No.	Equipment	Q'ty
Intensive Care Unit		
1	Recovery Bed	5
2	Air Fluidized Support System with Bed	10
3	Bed Side Monitor	15
4	Defibrillator	2
5 - 1	Ventilator for Adult	4
5 - 2	Ventilator for Child	1
6	Manual Resuscitator	5
7	Infusion Pump	15
8	Syringe Pump	15
9	Suction Unit	5
10	X-ray Mobile Unit	1
11	Oxygen Tent	2
12	Electroencephlograph, Portable	1
OPERATION THEATER		
13	Anesthesia Unit with Ventilator	5
14	Electrosurgical Unit	5
15 - 1	Laproscope Set	2
15 - 2	Instrument Set for Abdominal Wall-Lift Method	2
15 - 3	TV System for Laproscope Set	1
16 - 1	X-ray TV Mobile Unit	1
16 - 2	Operating Table for X-ray TV Mobile Unit	1
17	X-ray Mobile Unit	1
18	Defibrillator	2
19	Monitor for Operation Room	1
20	Operating Microscope for ENT	1
21-1	Operating Microscope for Neurosurgery	1
21-2	Operating Microscope for Angiosurgery	1
22	Operating Instrument Set	5
23	Gastrectomy Instrument Set	5
24	Cholecystotomy Instrument Set	5
25	Nephrectomy Instrument Set	5
26	Prostatomy Instrument Set	5
27	Thyreidotomy Instrument Set	5
28	Appendectomy Instrument Set	5
29	Neurosurgery Instrument Set	5
30	Otolaryngology Surgical Instrument Set	5

4. Equipment List

No.	Equipment	Q'ty
31	Stomatology Surgical Instrument Set	5
32	Microsurgery Instrument Set	3
33	Cardiovascular Surgery Instrument Set	3
34	Emergency Tracheotomy Instrument Set	5
35	Electric Dermaolome	3
36	Set Instruments for Carotid Surgery	3
37	Plastic and Reconstructive Surgery Set	3
38	Plastic and Reconstructive Surgery Set	3
39	Dermatoplastic Surgery Set	3
40	Dental Unit with Chair and Lamp	4
41	Sarvotorinic Micro Motor	1
42	Obwegeser Set	1
43	Titanium Microplate System	1
LABORATORY		
44	Blood Coagulation Meter	1
45	Spectrophotometer	2
46	Bilirubin Meter	1
47	Glucose Analyzer	1
48	CO2 Incubator	1
49	Electrolyte Analyzer	1
50	Table Top Centrifuge	2
51	High Speed Centrifuge	1
52	Micro Hematocrite Centrifuge	1
53	Universal Microscope	6
54	Incubator	2
55	Analytical Balance	2
ENDOSCOPIC EXAMINATION		
56	Gastrointestinal Fiberscope	2
57	Duodenofiberscope	1
58	Colonofiberscope	2
59	Rhino-Laryngofiberscope	1
60	Bronchofiberscope	2
61	ENT Instrument Set	1
62	Rectoscope	4
63	Endoscopic TV System	3
64	Endoscopic Suction Unit	3
65	Endoscopic Washer	1

4. Equipment List

No.	Equipment	Q'ty
66	Halogen Light Source for Endoscope	3
67	Cabinet for Endoscope	3
68	Electro Surgery Set	3
DIAGNOSTIC EXAMINATION		
69	Electrocardiograph, Portable	2
70	Electrocardiograph 3ch	2
71	Spiro Analyzer	1
72	Diagnostic Ultrasound Scanner with Doppler	1
73	Ultrasound Scanner, Portable	1
74 - 1	X-ray Diagnostic Table Unit	1
74 - 2	X-ray Film Processor	1
75 - 1	Panoramic X-ray Unit for Dental	1
75 - 2	Dental X-ray Unit	1
76	Electroencephlograph	1
94	Angiography System	1
REHABILITATION / PHYSIOTHERAPY		
77	Hydrotherapy Bath Unit	1
78	Paraffin Bath for Arms and Legs	1
79	Low Frequency Therapy Unit	1
80	Microwave Therapy Unit	1
81	Short-wave Therapy Unit	1
82	Ultrasound Therapy Unit	1
83	Ultraviolet Lamp	1
84	Infrared Lamp	1
85	Electric Traction Unit	2
HOSPITAL EQUIPMENT		
86 - 1	High Pressure Steam Sterilizer, Large	3
86 - 2	High Pressure Steam Sterilizer, Small	2
86 - 3	Water Softener for High Pressure Steam Sterilizer	2
87	Hot Air Sterilizer	10
88	Automatic Water Distillation Apparatus	10
89	Burn Bath Unit	2
90	Standby Generator	1
91	Personal Computer Set	7
92	Ultrasonic Washer	1
93	Formalin Gas Sterilizer	1

5. Operation and Maintenance Cost Estimation

5. Operation and Maintenance Cost Estimation

DEPARTMENT	Operation and Maintenance Cost per Year (US \$)
(Medical Equipment by Japanese Grant Aid)	
ICU	36,745.78
OPERATION THEATER	20,572.03
LABORATORY	16,016.40
ENDOSCOPIC EXAMINATION	0.00
EXAMINATION / DIAGNOSTIC	328,274.53
REHABILITATION / PHYSIOTHERAPY	0.00
HOSPITAL EQUIPMENT	9,288.16
Maintenance Fee for X-ray Equipment	11,363.00
(1) Sub-total (US \$)	422,259.90
(2) Maintenance Fee for MRI Equipment	45,454.00
(3) Maintenance Fee for New ICU Department	160,000.00
Total (1)+(2)+(3), US \$	627,713.90

5. Operation and Maintenance Cost Estimation

No.	DESCRIPTION	Q'ty	Unit Price (US \$)	Sub-Total (US \$)	Operation and Maintenance Cost per Unit x Year (US \$)	Q'ty	Operation and Maintenance Cost per Year (US \$)
ICU							
3	Bed Side Monitor				608.12	15	9,121.82
	Disposable Electrode (250pcs/set)	3	131.81	395.42			
	Skin Electrode	1	70.90	70.90			
	ECG Paste (200g)	6	10.00	59.99			
	Electrode Lead	1	81.81	81.81			
5-1	Ventilator for Adult				1,133.05	4	4,532.20
	Corrugate Hose	1	41.09	41.09			
	Endotracheal Tube (10pcs/set)	1	24.43	24.43			
	Micro Filter	4	266.88	1,067.53			
5-2	Ventilator for Child				1,133.05	1	1,133.05
	Corrugate Hose	1	41.09	41.09			
	Endotracheal Tube (10pcs/set)	1	24.43	24.43			
	Micro Filter	4	266.88	1,067.53			
7	Infusion Pump				703.57	15	10,553.49
	Infusion Tube Set	300	2.35	703.57			
8	Syringe Pump				436.32	15	6,544.80
	Syringe (50 ml)	300	0.84	250.88			
	Extension Tube	300	0.62	185.44			
10	X-ray Mobile Unit				4,363.20	1	4,363.20
	X-ray Film (100pcs/set)	12	363.60	4,363.20			
12	Electroencephalograph, Portable				497.22	1	497.22
	EEG Paste (1200g)	1	81.81	81.81			
	ECG Paste (200g)	1	10.00	10.00			
	Recording Ink (Black 400ml)	1	45.45	45.45			
	Recording Paper (300m)	6	59.99	359.96			
OPERATION THEATER							
13	Anesthesia Machine				1,942.99	5	9,714.94
	CO2 Absorber	1	236.34	236.34			
	Mask Set	1	102.26	102.26			
	Respiratory Bag	1	30.00	30.00			
	Corrugate Hose	1	65.45	65.45			
	Endotracheal Tube Set (10pcs/set)	1	681.75	681.75			
	Suction Catheter	1	163.62	163.62			
	Bacteria Filter for Ventilation circuit	1	545.40	545.40			
	Bacteria Filter	1	118.17	118.17			
14	Electrosurgical Unit				304.52	5	1,522.58
	Lead Electrode	1	99.99	99.99			
	Cord for Lead Electrode	1	136.35	136.35			
	Cord for Bipolar Forceps	1	68.18	68.18			
16-1	X-ray TV Mobile Unit				4,363.20	1	4,363.20
	X-ray Film (100pcs/set)	12	363.60	4,363.20			
17	X-ray Mobile Unit				4,363.20	1	4,363.20

5. Operation and Maintenance Cost Estimation

No.	DESCRIPTION	Q'ty	Unit Price (US \$)	Sub-Total (US \$)	Operation and Maintenance Cost per Unit x Year (US \$)	Q'ty	Operation and Maintenance Cost per Year (US \$)
	X-ray Film (100pcs/set)	12	363.60	4,363.20			
19	Monitor for Operation Theater				608.12	1	608.12
	Disposable Electrode (250pcs/set)	3	131.81	395.42			
	Skin Electrode	1	70.90	70.90			
	ECG Paste (200g)	6	10.00	59.99			
	Electrode Lead	1	81.81	81.81			
LABORATORY							
44	Blood Coagulation Meter				4,169.58	1	4,169.58
	Reagent / Recording Paper	2	2,084.79	4,169.58			
46	Bilirubin Meter				4,072.32	1	4,072.32
	Dry-Chem. Slide (50pcs)	60	63.63	3,817.80			
	Disposable Tip (10 x 100pcs/set)	1	90.90	90.90			
	Recording Paper (6pcs/set)	6	27.27	163.62			
47	Glucose Analyzer				3,526.92	1	3,526.92
	Dry-Chem. Slide (50pcs)	60	54.54	3,272.40			
	Disposable Tip (10 x 100pcs/set)	1	90.90	90.90			
	Recording Paper (6pcs/set)	6	27.27	163.62			
49	Electrolyte Analyzer				4,247.58	1	4,247.58
	Pump Tube Set	1	369.96	369.96			
	Reagent for Adjustment	2	1,706.83	3,413.66			
	Cleaning Solution (100ml)	2	16.00	32.00			
	Recording Paper (10rolls/set)	12	36.00	431.96			
EXAMINATION / DIAGNOSTIC							
69	Electrocardiograph, Portable				857.19	2	1,714.37
	Electrode Cable Set	1	145.44	145.44			
	ECG Paste (200g)	3	10.00	30.00			
	Recording Paper (60m x 10rolls/set)	3	227.25	681.75			
70	Electrocardiograph 3ch				1,568.93	2	3,137.87
	Electrode Cable Set	1	145.44	145.44			
	ECG Paste (200g)	6	10.00	59.99			
	Recording Paper (60m x 10rolls/set)	6	227.25	1,363.50			
71	Spro Analyzer				918.09	1	918.09
	Paper Mouthpiece (100pcs/set)	6	14.54	87.26			
	Nose Clip	1	21.82	21.82			
	Filter (100pcs/set)	1	209.07	209.07			
	Recording Paper (10rolls/set)	6	99.99	599.94			
72	Diagnostic Ultrasound System				940.82	1	940.82
	Jelly (12pcs/set)	3	109.08	327.24			
	Recording Paper (5rolls/set)	6	102.26	613.58			
73	Portable Ultrasound Scanner				524.95	1	524.95
	Jelly (12pcs/set)	2	109.08	218.16			
	Recording Paper (5rolls/set)	3	102.26	306.79			

5. Operation and Maintenance Cost Estimation

No.	DESCRIPTION	Q'ty	Unit Price (US \$)	Sub-Total (US \$)	Operation and Maintenance Cost per Unit x Year (US \$)	Q'ty	Operation and Maintenance Cost per Year (US \$)
74-1	Universal Diagnostic Table (X-ray)				18,180.00	1	18,180.00
	X-ray Film (100pcs/set)	50	363.60	18,180.00			
74-2	X-ray Film Processing Apparatus				872.64	1	872.64
	Developing Solution (10 L)	24	18.18	436.32			
	Fixing Solution (10 L)	24	18.18	436.32			
75-1	Panoramic X-ray Unit for Dental				628.85	1	628.85
	Panoramic X-ray Film (100pcs/set)	6	90.90	545.40			
	Developing Solution (2 L)	12	3.18	38.18			
	Fixing Solution (2 L)	12	3.77	45.27			
75-2	Dental X-ray Unit				356.15	1	356.15
	Dental X-ray Film (100pcs/set)	6	45.45	272.70			
	Developing Solution (2 L)	12	3.18	38.18			
	Fixing Solution (2 L)	12	3.77	45.27			
76	Electroencephalograph				994.45	1	994.45
	EEG Paste (1200g)	2	81.81	163.62			
	ECG Paste (200g)	2	10.00	20.00			
	Recording Ink (Black 400ml)	2	45.45	90.90			
	Recording Paper (300m)	12	59.99	719.93			
94	Angiography System				300,006.36	1	300,006.36
	X-ray Film (100pcs/set)	621	363.60	225,795.60			
	Syringe for Angiography	260	22.73	5,908.50			
	Extension Tube	260	13.18	3,426.93			
	Three-way stopcock	260	9.54	2,481.57			
	Angiography Catheter	260	72.72	18,907.20			
	Wire Guide	260	54.54	14,180.40			
	Sheath Introducer	260	67.27	17,489.16			
	Angiokit	260	45.45	11,817.00			
HOSPITAL EQUIPMENT							
88	Automatic Water Distillation Apparatus				890.82	10	8,908.20
	Pre-Filter	4	50.00	199.98			
	Ion Exchange Cartridge	4	172.71	690.84			
90	Standby Generator				379.96	1	379.96
	Oil Filter	2	87.26	174.53			
	Fuel Filter	2	69.99	139.99			
	Diesel Oil (20 L)	6	10.91	65.45			
					Total (US \$)		410,896.90

6. Financial Analysis Data

FINANCIAL ANALYSIS DATA / SCENARIO 1

(1,000M)

REVENUE	coefficient	1995	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
I. From Ministry of Health												
Personnel Expense	prices	81,844	141,426	169,711	203,654	244,384	295,261	351,913	422,296	506,755	608,106	729,728
Operating Expense	prices	177,843	307,313	368,775	442,580	531,036	637,244	764,692	917,631	1,101,157	1,321,388	1,585,666
SUB TOTAL		259,687	448,739	538,487	646,134	775,421	930,505	1,116,606	1,339,927	1,607,912	1,929,495	2,315,394
II. Medical Care Revenue												
	prices, new equipment	5,795	20,027	24,022	28,839	34,606	41,528	49,883	59,800	71,760	86,112	103,334
III. Miscellaneous												
	prices	10,966	18,950	22,740	27,288	32,745	39,294	47,153	56,584	67,900	81,481	97,777
TOTAL REVENUE		276,448	487,715	585,258	702,310	842,772	1,011,327	1,213,592	1,456,310	1,747,572	2,097,087	2,516,504
EXPENDITURES												
I. Personnel Expense												
	prices	53,826	93,011	111,614	133,936	160,724	192,868	231,442	277,730	323,276	399,932	479,918
II. Insurance / Pension Expense / Taxes												
	prices	48,892	84,485	101,382	121,658	145,990	175,187	210,225	252,270	302,724	363,269	435,922
III. Material Costs												
Pharmaceuticals	patients/prices	31,903	60,592	75,037	92,926	115,080	142,515	176,491	218,566	270,672	335,200	415,112
Materials for medical care	patients/prices	22,243	42,434	52,551	65,079	80,593	99,807	123,601	153,067	189,558	234,749	290,713
Supplies for meals	patients/prices	25,009	47,499	58,823	72,846	90,213	111,719	138,333	171,337	212,183	262,768	325,411
Capital Investment	prices	12,848	22,201	26,642	31,970	38,264	46,037	55,244	66,293	79,551	95,462	114,554
Utilities	prices	4,308	7,445	8,983	10,720	12,864	15,437	18,524	22,229	26,675	32,010	38,412
Miscellaneous	prices	51,933	89,740	107,688	129,226	155,071	186,085	223,302	267,962	321,555	385,866	463,039
SUB TOTAL		148,344	269,911	329,674	402,767	492,185	601,600	735,515	899,454	1,100,193	1,346,055	1,647,242
IV. Office Expense												
	prices	968	1,673	2,007	2,409	2,891	3,469	4,163	4,995	5,994	7,193	8,632
V. Maintenance Expense												
Equipment / Plant / Vehicles												
(now on use)	patients/prices	10,718	20,356	25,209	31,219	38,662	47,879	59,293	73,429	90,934	112,613	139,460
Equipment by JPN Grant Aid	patients/prices		1,266,905	1,991,236	2,465,947	3,053,828	3,781,961	4,683,457	5,799,993	7,182,711	8,895,070	11,015,654
MRI Equipment	patients/prices		181,818	225,164	278,843	345,319	427,643	529,593	655,848	812,202	1,005,331	1,245,621
New ICU Equipment	patients/prices			640,000	792,576	981,526	1,215,522	1,505,302	1,864,166	2,308,584	2,858,950	3,540,524
SUB TOTAL		10,718	1,469,079	2,881,609	3,568,885	4,419,335	5,472,905	6,777,645	8,393,436	10,394,431	12,872,463	15,941,258
TOTAL EXPENDITURES		262,748	1,918,159	3,426,286	4,229,355	5,221,124	6,446,029	7,958,990	9,827,886	12,136,621	14,988,912	18,512,973
REVENUES LESS EXPENDITURES												
		13,700	-1,430,444	-2,841,027	-3,527,045	-4,378,352	-5,434,703	-6,745,398	-8,371,575	-10,389,048	-12,891,825	-15,996,469

FINANCIAL ANALYSIS DATA / SCENARIO 2

(1,000MM)

REVENUE	coefficient	collected rate	1995	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
I. From Ministry of Health													
Personnel Expense	prices		81,844	141,426	169,711	203,654	244,384	293,261	351,913	422,296	506,755	608,106	729,728
Operating Expense	prices		177,843	307,313	368,775	442,530	531,036	637,244	764,692	917,631	1,101,157	1,321,388	1,585,666
SUB TOTAL			259,687	448,739	538,487	646,184	775,421	930,505	1,116,606	1,339,927	1,607,912	1,929,495	2,315,394
II. Medical Care Revenue (Foreigner) (Residents)	prices, new equipment		5,795	20,027	24,032	28,839	34,606	41,528	49,833	59,800	71,760	86,112	103,334
Hospital Charges	prices	30%		47,023	56,428	67,714	81,236	97,508	117,009	140,411	168,493	202,192	242,630
Examination by Microscopic	patients/prices	30%		1,493	1,849	2,290	2,855	3,511	4,349	5,385	6,669	8,259	10,228
Blood Test	patients/prices	30%		81,086	100,417	124,356	154,003	190,717	236,184	292,490	362,219	448,572	555,512
Microbiological Test	patients/prices	30%		6,845	8,477	10,498	13,000	16,099	19,938	24,691	30,577	37,866	46,894
Examination by X-ray	patients/prices	30%		8,175	10,124	12,537	15,526	19,227	23,811	29,487	36,517	45,223	56,004
Examination by Ultrasound	patients/prices	30%		633	784	971	1,202	1,489	1,844	2,284	2,828	3,502	4,337
SUB TOTAL			5,795	165,281	202,110	247,203	302,429	370,079	452,967	554,547	679,063	831,726	1,018,939
III. Miscellaneous	prices		10,966	13,950	22,740	27,288	32,745	39,294	47,153	56,584	67,900	81,481	97,777
TOTAL REVENUE			276,448	632,970	763,336	920,675	1,110,595	1,339,878	1,616,726	1,951,058	2,354,876	2,842,702	3,432,109

EXPENDITURES	coefficient	1995	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
I. Personnel Expense	prices	53,826	93,011	111,614	133,936	160,724	192,868	231,442	277,730	333,276	399,932	479,918
II. Insurance / Pension Expense / Taxes	prices	48,892	84,485	101,382	121,658	145,990	175,187	210,225	252,270	302,724	363,269	435,922
III. Material Costs												
Pharmaceuticals	patients/prices	31,903	60,592	75,037	92,926	115,080	142,515	176,491	218,566	270,672	335,200	415,112
Materials for Medical Care	patients/prices	22,343	42,434	52,551	65,079	80,593	99,807	123,601	153,067	189,558	234,749	290,713
Supplies for Meals	patients/prices	25,009	47,499	58,823	72,846	90,213	111,719	138,353	171,337	212,183	262,768	325,411
Capital Investment	prices	12,848	22,201	26,642	31,970	38,364	46,037	55,244	66,293	79,551	95,462	114,564
Utilities	prices	4,308	7,445	8,933	10,720	12,864	15,437	18,524	22,229	26,675	32,010	38,412
Miscellaneous	prices	51,933	89,740	107,688	129,226	155,071	186,085	223,302	267,962	321,555	385,866	462,039
SUB TOTAL		148,344	269,911	329,674	402,767	492,185	601,600	735,515	899,454	1,100,195	1,346,055	1,647,242
IV. Office Expense	prices	968	1,673	2,007	2,409	2,891	3,459	4,163	4,995	5,994	7,193	8,632
V. Maintenance Expense												
Equipment / Plant / Vehicles (now on use)	patients/prices	10,718	20,356	25,209	31,219	38,662	47,879	59,293	73,429	90,934	112,613	139,460
Equipment by JPN Grant Aid	patients/prices		1,266,905	1,991,236	2,455,947	3,053,828	3,781,861	4,683,457	5,799,993	7,182,711	8,895,070	11,015,654
MRI Equipment	patients/prices		181,818	225,164	278,843	345,319	427,643	529,593	655,848	812,202	1,005,831	1,245,621
New ICU Equipment	patients/prices			640,000	792,576	981,526	1,215,522	1,505,302	1,864,166	2,308,584	2,858,950	3,540,524
SUB TOTAL		10,718	1,469,079	2,881,609	3,568,585	4,419,335	5,472,905	6,777,645	8,393,436	10,394,431	12,872,463	15,941,258
TOTAL EXPENDITURES		262,748	1,918,159	3,426,286	4,229,355	5,221,124	6,446,029	7,983,990	9,827,886	12,136,621	14,988,912	18,512,973

REVENUES LESS EXPENDITURES		13,700	-1,285,189	-2,662,949	-3,308,630	-4,110,529	-5,106,151	-6,342,264	-7,876,828	-9,781,745	-12,146,210	-15,080,864
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7. Monitoring Form

7. Monitoring Form

1. Monitoring on Hospital Function Improvement

Monitoring items	Result
(1) Satisfaction of in-patients	(Ex.) Conduct questionnairing every 2 year for 100 to 200 in-patients.
(2) Duration of stay / yr. (Average)	
(3) Bed Occupancy Rate	
(4) Mortality Rate in Hospital	
(5) Month, Dept. wise number of operation cases	
(6) Survey on Satisfaction of hospital staff members	
(7) Work load of hospital staff members (Hrs. / week or month)	
(8) Wages of hospital staff members	
(9) Qualitative improvement for training of students	Conduct questionnairing (sampling possible).
(10) Yearly number of students received training	
(11) Number of Drs. received post-graduate course	
(12) Satisfaction of Drs. received post-graduate course	Conduct questionnairing (sampling possible).

2. Monitoring on Use of Equipment

Monitoring items	Answers
(1) Number of Equipment	
(2) Number of Patients	
(3) Number of Tests	
(4) Qty of consumable supply	
(5) Duration not working ① Break-down ② No work load ③ No consumable supply ④ Other causes ①~④ Total duration (Hrs.)	

8. Minutes of Discussion (Basic Design Survey)

MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY
ON
THE PROJECT FOR IMPROVEMENT OF MEDICAL EQUIPMENT
IN
TURKMENISTAN

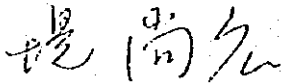
Based on the results of the Preliminary Study, the Japan International Cooperation Agency (JICA) decided to conduct a Basic Design Study on the Project for Improvement of Medical Equipment in Turkmenistan (hereinafter referred to as "the Project").

JICA sent to Turkmenistan a study team, which is headed by Mr. Naohiro TSUTSUMI, Assistant Director, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs (hereinafter referred to as "the Team"), and is scheduled to stay in the country from October 15th to November 7th, 1996.

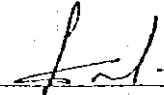
The Team held discussions with the officials concerned of the Government of Turkmenistan and conducted a field survey in the study area.

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

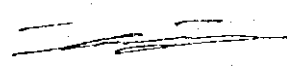
Ashkhabad, October 26, 1996



Naohiro TSUTSUMI
Leader,
Basic Design Study Team
JICA



Vladimir SOBOLEV
Vice Minister,
Ministry of Health & Medical
Industry of Turkmenistan



Bairamov Serdar BABAKARYEVICH
General Director,
The Treatment and Consulting Center,
by President of Turkmenistan
S. A. Niyazow

ATTACHMENT

1. Objective

The objective of the Project is to improve medical service in the Treatment and Consulting Center by President of Turkmenistan S. A. Niyazow by means of procurement of the medical equipment.

2. Project Site

The Treatment and Consulting Center by President of Turkmenistan S. A. Niyazow (Ashkhabad City)

3. Responsible and Executing Organization

- (1) Responsible organization : the Ministry of Health and Medical Industry
- (2) Executing organization : the Treatment and Consulting Center by President of Turkmenistan S. A. Niyazow

4. Items Requested by the Turkmenistan Side

After discussions with the Team, the equipment in Annex I were finally requested by the Turkmenistan side. However, the final components of the Project will be decided after further studies by the Japanese side.

5. Basic Criteria to Select the Equipment

The basic criteria for selecting equipment are as follows, and final components of the Project shall be determined on these criteria.

- (1) Necessity for Procurement,
- (2) Technical Level of Handling,
- (3) Appropriateness of Specifications,
- (4) Allocation and Quantity,
- (5) Maintenance Capacity, and
- (6) Maintenance Cost.

N T

6. Japan's Grant Aid System

- (1) The Turkmenistan side has understood the system of Japan's Grant Aid explained by the Team. The details are attached to Annex II .
- (2) The Turkmenistan side will take the necessary measures, described in Annex III for smooth implementation of the Project, on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

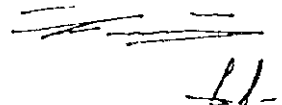
7. Schedule of the Study

- (1) The consultant will proceed to further studies in Turkmenistan until November 7, 1996.
- (2) JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around January 1997.
- (3) In case that the contents of the report are accepted in principle by the Government of Turkmenistan, JICA will complete the final report and send it to the Government of Turkmenistan by around April 1997.

8. Others

- (1) The Turkmenistan side will submit the plan to allocate and secure enough budget to operate and maintain properly the equipment procured by the Project to the Embassy of Japan in Russia.
- (2) The Turkmenistan side will take a responsibility to monitor the equipment procured by the Project and submit the results of monitoring to the Embassy of Japan in Russia periodically.
- (3) These minutes of discussions are written in English and Russian languages. In case of any divergence in interpretation, the English text shall prevail.

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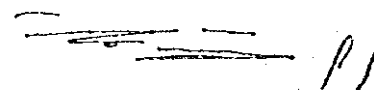


Procurement of Medical Equipment

Annex-1

No.	Department	Equipment	Q'ty
1	ICU	Recovery Bed	5 B
2		Air Fluidized Support System with Bed	10 A
3		Bed Side Monitor	15 A
4		Defibrillator	2 A
5		Ventilator	10 A
6		Manual Resuscitator	10 B
7		Blood Gas Analyzer	1 B
8		Electrolyte Analyzer	1 B
9		Infusion Pump	20 A
10		Syringe Pump	20 A
11		Anesthesia Machine	1 A
12		Suction Unit	6 B
13		Electrosurgical Unit	1 A
14		X-ray Mobile Unit	1 A
15		Oxygen Tent	2 B
16		Blood Separator	2 A
17		Electroencephlograph, Portable	1 A
18	OPERATION THEATER	Anesthesia Machine	5 A
19		Anesthesia Ventilator	5 A
20		Electrosurgical Unit	5 A
21		Laparoscope for Cholecystectomy Set	1 A
22		Laparoscope Set	3 A
23		X-ray TV Mobile Unit	2 A
24		X-ray Mobile Unit	1 A
25		Hyper Hypothermia Unit	1 A
26		Defibrillator	2 A
27		Cardiac Operation Monitor	1 A
28		Electrolyte Analyzer	1 B
29		Operating Microscope for ENT	1 A
30		Operating Microscope for Surgery	1 A
31		Operating Microscope for Neurosurgery	1 A
32		Operating Instrument Set	5 A
33		Gastrectomy Instrument Set	5 A
34		Cholecystotomy Instrument Set	5 A
35		Nephrectomy Instrument Set	5 A
36		Prostatomy Instrument Set	5 A
37		Thyreidotomy Instrument Set	5 A
38		Appendectomy Instrument Set	5 A
39		Neurosurgery Instrument Set	5 A
40		Otolaryngology Surgical Instrument Set	5 A
41		Stomatology Surgical Instrument Set	5 A
42		Abdominal Surgery Instrument Set	5 A
43		Microsurgery Instrument Set	5 A
44		Cardiovascular Surgery Instrument Set	3 A

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Procurement of Medical Equipment

Annex-1

No.	Department	Equipment	Q'ty	
45		Emergency Tracheotomy Instrument Set	5	A
46		Electric Dermaotome	5	A
47		Set Instruments for Carotid Surgery	3	A
48		Set Instruments for Aorto-coronary Bypass	3	A
49		Plastic and Reconstructive Surgery Set	3	A
50		Dermatoplastic Surgery Set	3	A
51		Dental Unit with Chair and Lamp	4	A
52		Sarvotorinic Micro Motor	1	A
53		Obwegeser Set	1	A
54		Titanium Microplate System	1	A
55	LABORATORY	Instant Chemistry Analyzer	2	B
56		Auto Blood Cell Counter	2	B
57		Blood Coagulation Meter	2	B
58		Photo Electric Colorimeter	2	B
59		Bilirubin Meter	1	A
60		Glucose Analyzer	1	A
61		Electrophoresis Apparatus	1	C
62		CO2 Incubator	1	B
63		Electrolyte Analyzer	1	A
64		Table Top Centrifuge	2	B
65		High Speed Centrifuge	1	C
66		Micro Hematocrite Centrifuge	1	A
67		Universal Microscope	6	A
68		Incubator	5	C
69		Flame Photometer	2	A
70		Analytical Balance	2	A
71	ENDOSCOPIC EXAMINATION	Gastrointestinal Fiberscope	2	A
72		Duodenofiberscope	2	A
73		Colonofiberscope	2	A
74		Rhino-Laryngofiberscope	2	A
75		Bronchofiberscope	2	A
76		ENT Instrument Set	1	A
77		Sigmoidoscope	2	A
78		Rectoscope	2	A
79		Endoscopic TV System	1	A
80		Endoscopic Suction Unit	2	A
81		Endoscopic Washer	1	A
82		Halogen Light Source for Endoscope	4	A
83		Electro Surgery Set	2	A
84	EXAMINATION / DIAGNOSTIC	Electrocardiograph, Portable	3	B
85		Electrocardiograph 3ch	3	A
86		Spiro Analyzer	1	A
87		Diagnostic Ultrasound System	2	A
88		Portable Ultrasound Scanner	2	B

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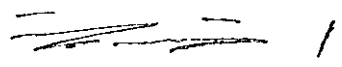
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Procurement of Medical Equipment

Annex-1

No.	Department	Equipment	Q'ty
89		Universal Diagnostic Table (X-ray)	1 A
90		Panoramic X-ray Unit for Dental	2 A
91		Electroencephlograph	1 A
92		Digital Angiographic System	1 A
93	REHABILITATION / PHYSIOTHERAPY	Hubbard Tank	1 B
94		Progressive Bathing System	1 B
95		Paraffin Bath for Arms and Legs	1 B
96		Low Frequency Therapy	1 B
97		Microwave Therapy Unit	1 B
98		Short-wave Therapy Unit	1 B
99		Ultrasound Therapy Unit	1 B
100		Ultraviolet Lamp	2 B
101		Ultraviolet and Infrared Lamp	2 B
102		Electric Traction	2 B
103	HOSPITAL EQUIPMENT	High Pressure Steam Sterilizer	5 A
104		Hot Air Sterilizer	10 A
105		Automatic Water Distillation Apparatus	10 B
106		Burn Bath	2 B
107		Standby Generator	1 A
108		Oxygen Producing Equipment	1 B
109		Personal Computer Set	10 B
110		Ultrasonic Washer	1 A
111		Formalin Gas Sterilizer	1 A

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Annex II
Japan's Grant Aid

1. Japan's Grant Aid System

Grant Aid Procedures

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

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of implementation	(The Notes exchanged between the Government of Japan and recipient country)

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

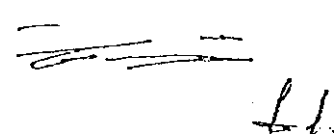
Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

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

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

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

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2. Basic Design Study

(1) Contents of the Study

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

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

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

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant 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 firm (s) selected carry (ies) out a Basic Design Study and write (s) a report, based upon terms of reference set by JICA. The consulting firm (s) used for the Study 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.

N.T.

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.

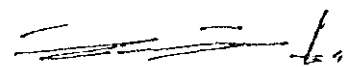
(3) The period of the Grant Aid means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm (s) and (a) contractor (s) and final payment to them must be completed. However in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

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

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

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(5) Necessity of Verification

The Government of 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 Verifications deemed necessary to secure accountability to Japanese taxpayers.

(6) Undertakings required of the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such 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 Aid should not be re-exported from the recipient country.

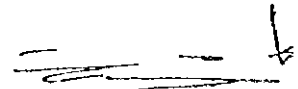
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(9) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign 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.

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Annex III

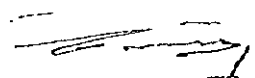
Necessary Measures to be taken by the Turkmenistan Government

Following necessary measures should be taken by the Government of Turkmenistan on condition that the Grant Aid by the Government of Japan is extended to the Project:

1. To provide data and information necessary for the Project;
2. To bear commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement (B/A) namely, the advising commission of the "Authorization to Pay (A/P)" and the payment commission;
3. To ensure prompt unloading, tax exemption, customs clearance at the port of disembarkation in Turkmenistan and prompt internal transportation therein of the materials and equipment for the Project purchased under the Grant Aid;
4. To exempt Japanese juridical and physical nationals or a staff from a third country engaged in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Turkmenistan with respect to the supply of the products and services under the verified contracts;
5. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Turkmenistan and stay therein for the performance of their work;
6. To provide necessary permissions, licenses and other authorizations for implementing the Project, if necessary;
7. To assign appropriate budget and teaching and administrative staff members for proper and effective operation and maintenance of equipment provided under the Grant Aid;

8. To maintain and use properly and effectively the facilities constructed and the equipment provided under the Project; and
9. To bear all the expenses, other than those to be borne by the Japan's Grant Aid within the scope of the Project.

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9. Minutes of Discussion(Draft Report)

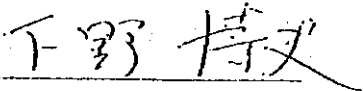
MINUTES OF DISCUSSIONS
ON
BASIC DESIGN STUDY
ON
THE PROJECT FOR IMPROVEMENT OF MEDICAL EQUIPMENT
IN
TURKMENISTAN
(CONSULTATION ON DRAFT FINAL REPORT)

In October 1996, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study team on the Project for Improvement of Medical Equipment in Turkmenistan (hereinafter referred to as "the Project") to Turkmenistan, and through the discussions, field survey, and technical examination of the results in Japan, has prepared the draft final report of the study.

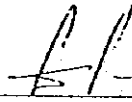
In order to explain and to consult the Turkmenistan side on the components of the draft final report, JICA send to Turkmenistan a study team, which is headed by Mr. Shimono, Grant Aid Division, Economic Cooperation Bureau, Ministry of Foreign Affairs (hereinafter referred to as "the Team"), to Turkmenistan and scheduled to stay in the country from 21 January to 27 January, 1997.

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


Ashkhabad, 27 January, 1997



Mr. Hiroshi Shimono
Leader,
Explanation Team for Draft Final Report
JICA



Vladimir SOBOLEV
Vice Minister,
Ministry of Health & Medical
Industry of Turkmenistan



Bairamov Serdar BABAKARYEVICH
General Director,
The Treatment and Consulting Center,
by President of Turkmenistan,
S. A. Niyazow

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ATTACHMENT

1. Components of Draft Report

The Turkmenistan side has agreed and accepted in principle the component of the Draft Report proposed by Team.

2. Japan's Grant Aid System

- (1) The Turkmenistan side has understood the system of Japan's Grant Aid as described in Annex 1 and explained by the Team.
- (2) The Turkmenistan side will take the 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.

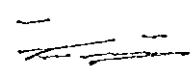
3. Further Schedule

The Team will make the Final Report in accordance with the confirmed items and send it to the Government of Turkmenistan by the end of April, 1997.

4. Others

- (1) The Turkmenistan side has agreed to allocate and secure budget enough to properly operate and maintain the equipment procured by the Project.
- (2) Both parties have agreed to include the contents of monitoring in the Final Report. The Turkmenistan side will take a responsibility to monitor the equipment procured by the Project and submit the results of monitoring to the Embassy of Japan in Russia periodically.
- (3) These minutes of discussions are written in English and Russian Language. In case of any divergence in interpretation, the English text shall prevail.

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Annex 1
Japan's Grant Aid

1. Japan's Grant Aid System

Grant Aid Procedures

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

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

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

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

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2. Basic Design Study

(1) Contents of the Study

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- b) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic points of view.
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- d) Preparation of a basic design of the Project
- e) Estimation of costs of the Project

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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 firm (s) selected carry (ies) out a Basic Design Study and write (s) a report, based upon terms of reference set by JICA. The consulting firm (s) used for the Study 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.

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3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

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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 weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

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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.)

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(5) Necessity of Verification

The Government of 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 Verifications deemed necessary to secure accountability to Japanese taxpayers.

(6) Undertakings required of the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such 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 Aid should not be re-exported from the recipient country.

(9) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign 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.

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Annex 2

Necessary Measures to be taken by the Turkmenistan Government

Following necessary measures should be taken by the Government of Turkmenistan on condition that the Grant Aid by the Government of Japan is extended to the Project:

1. To provide data and information necessary for the Project;
2. To bear commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement (B/A) namely, the advising commission of the "Authorization to Pay (A/P)" and the payment commission;
3. To ensure prompt unloading, tax exemption, customs clearance at the port of disembarkation in Turkmenistan and prompt internal transportation therein of the materials and equipment for the Project purchased under the Grant Aid;
4. To exempt Japanese juridical and physical nationals or a staff from a third country engaged in the Project from customs duties, internal taxes and other fiscal levies which may be imposed in Turkmenistan with respect to the supply of the products and services under the verified contracts;
5. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Turkmenistan and stay therein for the performance of their work;
6. To provide necessary permissions, licenses and other authorizations for implementing the Project, if necessary;
7. To assign appropriate budget and teaching and administrative staff members for proper and effective operation and maintenance of equipment provided under the Grant Aid;

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8. To maintain and use properly and effectively the facilities constructed and the equipment provided under the Project; and
9. To bear all the expenses, other than those to be borne by the Japan's Grant Aid within the scope of the Project.

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10. References

10. References

1. Presidential State Programme of Turkmenistan "HEALTH"
2. Temporary Price list for Medical Services
3. Financial News, 1995
4. Turkmenistan and UNICEF Country Programme of Cooperation 1995-1999,
Protecting Children during Social and Economic Restructuring, Master Plan of
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5. Some Health Statistics about Turkmenistan, 4/15/96, WHO
6. List of UNDP Assisted Activities in Turkmenistan as of May 1996
7. Common Health, Journal of the American International Health Alliance,
Summer 1996

JICA

