Ministry of Health
Ukraine

No.

BASIC DESIGN STUDY REPORT
ON
THE PROJECT
FOR
IMPROVEMENT OF MEDICAL EQUIPMENT
FOR CHILDREN HOSPITALS
IN
UKRAINE

October 2006

JAPAN INTERNATIONAL COOPERATION AGENCY

INTERNATIONAL TECHNO CENTER CO., LTD.

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Preface

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

JICA sent to Ukraine a study team from May 9 to June 14, 2006.

The team held discussions with the officials concerned of the Government of Ukraine, 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 Ukraine 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 Ukraine for their close cooperation extended to the teams.

October, 2006

Masafumi Kuroki
Vice President
Japan International Cooperation Agency

October, 2006

Letter of Transmittal

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

This study was conducted by International Techno Center Co., Ltd., under a contract to JICA, during the period from April, 2006 to October, 2006. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Ukraine 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.

Kazuhiro Abe
Project Manager,
Basic design study team on
the Project for Improvement of Medical
Equipment for Children Hospitals in Ukraine

Summary

Summary

As the population ages and the birthrate declines, the Ukrainian Government has announced efforts designed to lower the infant mortality rate, enhance the health of children and make improvements in the field of pediatric care. These include the National Program for the Children of Ukraine, a presidential decree issued in 1996, and the Ukraine: Millennium Development Goals 2000+5, announced in September of 2005. In addition, in December of 2005, with a view to integration into the EU, which is the basic principle behind economic reforms, a presidential decree was issued that outlined a policy of raising the facility standards (including equipment) of hospitals within Ukraine so that they meet EU standards, with particular priority placed on rural rather than urban areas, and hospitals for children rather than adults. In accordance with that policy, the goal of this project is to improve rural children's hospitals.

Against such a background, Japan implemented the "The Project for Improvement of Medical Equipment in the Ukrainian Children's Specialized Hospital "OKHMATDET" a Japanese General Grant Aid Project for 2000, in order to upgrade medical equipment at the top referral hospitals for pediatric care in Ukraine.

In 2001, the Ukrainian government then requested Japan to sponsor a project to upgrade medical equipment at oblast-run children's hospitals, which are considered the secondary level of medical care in Ukraine and the top referral hospitals (Kirovgrad Oblast Children Clinical Hospital, Lugansk Oblast Children Clinical Hospital, Kharkiv Oblast Children Clinical Hospital No.1, Dnepropetrovsk Oblast Children Clinical Hospital, and Donetsk Oblast Children Clinical Hospital) in the five oblasts. The five hospitals that provide pediatric medical care that are targeted by this project cover about 28% of the 9.9 million children in Ukraine as top referral hospitals in each respective oblast.

In response to the request, in July 2003, Japan International Cooperation Agency (JICA) dispatched the "Confirmation Study Team for Ukraine and the Moldova Project (for Promoting Small Business and Health/Medical Services)" and confirmed that priority would be given to this project. A basic design study team was then dispatched to the project sites from May 9 to June 14, 2006 by JICA. After the team returned home to conduct domestic tasks, an outline of the B/D was explained at the sites from August 27 to September 7, 2006.

The request in this project from the Ukrainian side entailed the overall improvement of the target hospitals with totaling 150 items of equipment, including air-conditioning equipment. In

response to this request, the onsite survey team, in accordance with the scheme of the Japanese Grant Aid, drafted the following design guidelines for this project, drafted a list of procurable basic equipment (64 items), and conducted surveys and deliberations at each of the target hospitals.

1. The target departments shall be the operating/treatment rooms, ICU, clinical laboratories, imaging diagnostic-related and other departments necessary at a children's hospital to provide essential diagnoses and treatment.
2. Equipment should be necessary ones for basic diagnostic and treatment activities for critical pediatric patients in each oblast in the field of pediatric medicine so that the patients do not have to be sent to other hospitals.
3. Equipment shall match the technical levels and maintenance capabilities of the receiving hospital and shall be deemed to have medical utility in the field of pediatric medicine.
4. Existing equipment that is usable, equipment that can be procured without outside help, equipment whose utility or area of benefit is limited and is deemed to make only a small contribution, equipment whose manufacturers are limited, and equipment that is not in line with the scheme of the Japanese Grant Aid Program, will be deleted.
5. In response to the raising of the age of patients to receive care at children's hospitals from 15 to 18, consideration must be given to equipment with regard to its use on pediatric patients whose build is the same as that of an adult.

Based on these considerations, the equipment to be procured in this plan as follows.

Department	Main Equipment
Operating Theater	Operating Table, Operating Light, Suction Unit, Operating Microscope, Defibrillator
Intensive Care Unit	Patient Monitor, Infant Incubator, Syringe Pump, Ventilator, Pulse Oxymeter, Infusion Pump, Infant Warmer, Ultrasonic Neblizer
Laboratory Department	Centrifuge(Table top), Autoclave, Hematology Analyser, Water Bath, Spectrophtometer, Incubator, PH Meter,Centrifuge(Hematocrit)
Imaging Diagnosis	CT Scanner, X-Ray Apparatus (General, Mobile, Dental, Fluoroscope), Ultrasound Diagnostic Apparatus (Potable, Doppler)
Others	Electrocardiograph, Spirometer, Autoclave, Sterilizer, Bronchoscope, Gastro Fiberscope, Cystoscope, Urethroscope

This project will be implemented in two phases on a hospital-by-hospital basis. Comparisons of the five target hospitals were done as part of onsite surveys, identifying two hospitals which were particularly poorly equipped. These two hospitals will be given priority and will be covered in Phase 1. Phase 1 will cover Kirovgrad Oblast Children Clinical Hospital and Lugansk Oblast Children Clinical Hospital, while Phase 2 will cover Kharkiv Oblast Children

Clinical Hospital No.1, Dnepropetrovsk Oblast Children Clinical Hospital, and Donetsk Oblast Children Clinical Hospital.
Based on the foregoing, the project is estimated to take 8 months to implement for each phase, and involve a total expenditure of roughly ¥927 million. The estimated cost dose not automatically indicate the maximum amount of the aid that is specified in the E/N.

The share of total annual expenditures occupied by consumables needed for the medical equipment to be procured under this project ranges from 6.9% to 27.1% at each hospital, and analogous figures for replacement parts are 0.8% to 7.6%.
The results of on-site surveys showed that budgets for consumables and replacement parts at each hospital are on ranges from 8% to 29% of total expenditures, and because the equipment to be procured under this project will also update the basic diagnostic equipment in current use, these costs are substantially within a range fully supported by current cost.

Based on the survey results discussed above, we believe that this plan is a valid assistance initiative for Japanese capital grant assistance.

Finally, smooth implementation of the plan and effective and sustained use of the equipment procured required consideration of the following points. The issues and proposals to be considered by Ukraine are the following.

1) Stable supply of financial resources for medical services
Ukraine has planned several times to introduce a compulsory health insurance system since gaining its independence in order to ensure sound health and medical funding. However, it has yet to succeed in realizing such a system.
Therefore, the budgets of the hospitals targeted by this project are still being drawn up based on the work quota method employed by the former Soviet Union, and based on the number of beds and employees at each hospital. The local government covers all expenditures for medical services, and patients are generally not charged for medical care.
Due to the economic growth since 2000, the budget of each hospital has significantly increased but remains inadequate to improve facilities and equipment. Thus in the years ahead, the country should build a more sound mechanism for funding medical services by introducing a compulsory health insurance system where patient co-payment is imposed, as well as a system of flat-rate payment by diagnostic related group which will be efficient in reducing the number of average hospitalized days and holding down extraneous medical costs.

2) Improvement in hospital management under a market economy system

The children's hospitals in Ukraine, including those covered by this project, have been reorganizing since the country gained its independence, including the separation from adult hospitals and a reduction in the number of beds. However, since these children's hospitals adopt the previously described work quota method, they still have too many beds and employees to secure their scale of management. Moreover, their clinical departments are so specialized that the efficiency is quite low.

In the future, these hospitals should make improvements, which include streamlining their departments, centralizing diagnostic departments, reusing human resources, reforming the financial management system, and reinforcing patient services. These steps will help the hospitals build a system to successfully compete with private hospitals that are expected to enter the market in the near future under a market economy system, and there is an urgent need to invigorate all pediatric medical care in Ukraine by taking these measures.

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Abbreviations

A/P	Authorization to Pay
B/A	Banking Arrangement
BHN	Basic Human Needs
E/N	Exchange of Notes
EU	European Union
GDP	Gross Domestic Product
GNI	Gross National Income
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
ICU	Intensive Care Unit
JICA	Japan International Cooperation Agency
NICU	Newborn Intensive Care Unit
ODA	Official Development Assistance

Chapter 1 Background of the Project

Chapter 1　Background of the Project

The population of Ukraine stands at approximately 47.1 million (in 2005), a decrease of approximately 4.4 million since the country's independence in 1991. In the backdrop of this decline are emigrations to foreign countries (approximately 1.2 million) and a fall in the birth rate, combined with a rise in the mortality rate.　In particular, the current birth rate of 8.1 per 1,000 persons（in 2005）is roughly 40 percent lower than it was in 1990.　Although the infant mortality rate, which was 14.3 per 1,000 live births in 2004, is falling relatively rapidly, strengthening pediatric medical services is an important task from the point of view of ensuring a sound producing population to offset the expected aging of the population, a result of a low birth rate.

Ukraine posted positive economic growth for the first time in 2000 after having experienced an unstable economic condition for approximately ten years following its independence. Nevertheless, its budget for the health and medical sector is low even in comparison with neighboring countries, including former members of the Soviet Union, and amounted to only 3.4% of its GDP in 2002 (compared with 4.7 % in Belarus, 6.1% in Poland, and 7.8% in Hungary). Ukrainian hospitals are therefore in poor condition, due to budget shortfalls although some extremely decrepit facilities and medical equipment are being upgraded. Improvement of children's hospitals is especially slow even in comparison with adult hospitals in spite of the adoption of the National Program for Children of Ukraine in 1996 in an attempt to strengthen pediatric medical services from the policy side.

Against such a background, Japan implemented the "The Project for Improvement of Medical Equipment in the Ukrainian Children's Specialized Hospital "OKHMATDET" a Japanese General Grant Aid Project for 2000, in order to upgrade medical equipment at the top referral hospitals for pediatric care in Ukraine.　In 2001, the Ukrainian government then requested Japan to sponsor a project to upgrade medical equipment at oblast-run children's hospitals, which are considered the secondary level of medical care in Ukraine and the top referral hospitals in the five oblasts.

In response to the request, in July 2003, Japan dispatched the "Confirmation Study Team for Ukraine and the Moldova Project (for Promoting Small Business and Health/Medical Services)" and confirmed that priority would be given to this project.　A basic design (B/D) study team was then dispatched to the project sites from May 9 to June 14, 2006.　After the team returned home to conduct domestic tasks, an outline of the B/D was explained at the sites from August 27 to September 7, 2006.

This project, based on the outcome of the confirmation and B/D studies, is intended to procure diagnostic and treatment equipment for the children's hospitals playing a central role in the five oblasts for the purpose of strengthening the pediatric medical care function in rural areas of Ukraine.

1-1 Natural Conditions

Located in the southern part of the former Soviet Union (north of the Black Sea), Ukraine extends about 1,400 km from east to west (long. 24- 40°E) and about 900 km from north to south (lat. 44 - 53°N), with its latitudes roughly the same as those of Sakhalin. Central Ukraine features large fertile plains of black soil and the river Dnieper running through the country. The country has the Poleshe Wetlands in the north, the hills of Donetsk in the east and the Carpathian Mountains, which run from Slovakia to Romania, in the west. The Crimean Peninsula—the well-known resort area—lies to the south.

The northern and western parts of the country enjoy have a boreal humid continental climate and have relatively heavy precipitation. The southeastern part has a dry steppe climate and the Crimean peninsula is relatively warm, with a mild and humid climate.

The annual precipitation is heavy in the northwestern area and becomes gradually lighter toward the southeastern part. The south sometimes suffers serious water shortages that entail restrictions being imposed on the water supply. The precipitation is heaviest in the western Carpathian region with 1,200 to 1,600 mm of annual rainfall, while lightest in the east with 300 mm a year. There are 80 to 120 days of snowy weather in winter. There are also extreme differences in temperature during the year. For example, there are 210 days a year when the average daytime temperature is 5℃ or higher, and 30 to 70 days of temperature averaging 20℃ or higher. In Kiev, the capital, the temperature drops to a low of -15℃ (in January) and reaches a peak temperature of 26℃ (in July). In Kharkov, location of the northernmost project site, the temperature drops to -7.2℃ (in January) and reaches 20.6℃ (in July). In Luhansk, the easternmost city, there is a temperature low of -15℃ (in January) in the coldest part of the country, and a high of 30℃ (in July). A record low temperature of -35℃ was recorded in 2005.

The five project sites are situated in flat areas ranging from the northeastern to southeastern parts of the country where the steppe climate brings subzero temperatures for more than 120 days a year. Therefore, transportation and installation work in winter should be avoided as much as possible in view of the possible accidents that may occur during the transport and delivery of materials due to frozen road conditions.

1-2 Consideration for the Environment and Local Community

The most important issues for medical institutions to consider on behalf of the environment and local community are how to safely dispose of medical waste and avoid the ill effects of radiation.

The results of a field study reveal that the oblast governments or privatized collectors collect and dispose of various types of waste from the target hospitals where the waste has been separated. MedTechnica (formerly a medical equipment supplier in the former Soviet Union and now a privatized corporation) periodically collects developing solution containing silver in each of the oblasts. and there have been no problems of environmental pollution.

In an effort to minimize the impact of radiation, the inside of radiation chambers and related doors at the hospitals targeted by this project are constructed of lead, concrete, and bricks for added protection. Some chambers have windows on the outer walls, which pose no problem according to Ukrainian standards unless there is a passage outside of the windows.

As stated above, the hospitals targeted by this project have been used as medical institutions since being constructed and have paid due consideration to the environment as such, even though the facilities have become very old.

Most of the equipment to be procured in this project has been selected to replace existing medical equipment now used at the hospitals. Consequently, the implementation of this project will have no adverse impact on the environment. Since this project will have no adverse environmental or social effect on the areas around the target hospitals, the project is thus classified as Category C.

Chapter 2 Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

As the population ages and the birthrate declines, the Ukrainian Government has announced efforts designed to lower the infant mortality rate, enhance the health of children and make improvements in the field of pediatric care. These include the National Program for the Children of Ukraine, a presidential decree issued in 1996, and the Ukraine: Millennium Development Goals 2000+5, announced in September of 2005. In addition, in December of 2005, with a view to integration into the EU, which is the basic principle behind economic reforms, a presidential decree was issued that outlined a policy of raising the facility standards (including equipment) of hospitals within Ukraine so that they meet EU standards, with particular priority placed on rural rather than urban areas, and hospitals for children rather than adults. In accordance with that policy, the goal of this project is to improve rural children's hospitals.

By procuring and upgrading decrepit medical equipment and making improvements to diagnostic accuracy and medical technology in rural pediatric care facilities in order to fulfill the goals mentioned above, it is hoped that this project will contribute to the resolution of issues in the field of pediatric care, such as the reduction in the infant mortality rate that Ukraine is striving for. Accordingly, the program to receive cooperation is one that will procure basic medical equipment necessary to provide various diagnostic and medical services as top referral hospitals in the field of pediatric medicine in the five target oblasts.

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design of the Policy

(1) Basic Policy

The request in this project from the Ukrainian side entailed the overall improvement of the target hospitals with totaling 150 items of equipment, including air-conditioning equipment. In response to this request, the onsite survey team, in accordance with the scheme of the Japanese Grant Aid, drafted the following design guidelines for this project, drafted a list of procurable basic equipment (64 items), and conducted surveys and deliberations at each of the target hospitals.

1. The target departments shall be the operating/treatment rooms, ICU, clinical laboratories, imaging diagnostic-related and other departments necessary at a children's hospital to provide essential diagnoses and treatment.

2. Equipment should be necessary ones for basic diagnostic and treatment activities for critical pediatric patients in each oblast in the field of pediatric medicine so that the patients do not have to be sent to other hospitals.
3. Equipment shall match the technical levels and maintenance capabilities of the receiving hospital and shall be deemed to have medical utility in the field of pediatric medicine.
4. Existing equipment that is usable, equipment that can be procured without outside help, equipment whose utility or area of benefit is limited and is deemed to make only a small contribution, equipment whose manufacturers are limited, and equipment that is not in line with the scheme of the Japanese Grant Aid Program, will be deleted.
5. In response to the raising of the age of patients to receive care at children's hospitals from 15 to 18, consideration must be given to equipment with regard to its use on pediatric patients whose build is the same as that of an adult.

Based on the design guidelines above, with the exception of treatment and surgery for certain congenital diseases and cardiovascular diseases that can only be performed at top-tier hospitals at the capital Kiev, the basic policy shall be to reinforce the functions of hospitals as destinations for treatment in each oblast to which pediatric patients are sent so that diagnoses and treatment for various pediatric illnesses can be carried out in each target region.

(2) Consideration of Natural Environmental Conditions

The winter climate of Ukraine（between November and March）is characterized by heavy snowfalls and below-zero temperatures in all regions. In particular, Lugansk, which is situated farthest east among the five hospitals in the project, recorded -35℃ in the winter of 2005. For this reason, transportation of medical equipment, delivery of procured materials, and equipment installation must be scheduled during non-winter seasons for safety's sake.

(3) Consideration of Socioeconomic Conditions

Medical services are provided free of charge in Ukraine. The operating cost of the hospitals in the project is provided mostly by oblast governments except for some contributions from private groups and aid from the central government. Consequently, medical equipment of the scope that can be supported by the budget of respective oblast governments will be procured in this project.

(4) Consideration of Procurement

To be able to use medical equipment in Ukraine, it must first be registered under the medical equipment registration system of the Ministry of Health of Ukraine. For this reason, only medical equipment that has been registered at the time of tender shall be subject to procurement, regardless of whether it is made in Japan, Ukraine, or a third country. Under this medical equipment registration system, in addition to mandating the registration of equipment, in 2007 it will become necessary to establish the agent that conducts maintenance, particularly for medical equipment manufactured outside of Ukraine. For this reason, for medical equipment that requires maintenance, only the products of manufacturers who currently have an agent in Ukraine will be considered.

(5) Management and Maintenance Capabilities of the Executing Agency

Concerning equipment scheduled for procurement in this project, medical equipment will be selected from among those for which it is possible to purchase replaceable parts and consumable supplies with the operational budget of each target hospital, and from among those that the relevant medical professionals can use with no trouble because they currently use it or have used it in the past.

During the installation stage, in order to prevent breakdowns due to faulty operation immediately after procurement and so that each piece of equipment can be used as long as possible, training on the use and routine inspection of equipment shall be given during operation training at installation time and during retraining (about one week after the initial operation training).

(6) Grades and Specifications of the Equipment

Much of the equipment currently used at the hospitals in this project was manufactured in the former Soviet Union or Eastern Europe from the late 1980s to the early 1990s, and the functions of the various equipment is identical to those currently manufactured in the various countries. Accordingly, equipment procured in this project shall be of roughly the same specifications as existing equipment so that medical professionals at the target hospitals have no trouble in using the equipment.

For consumable supplies necessary for equipment scheduled for procurement in both Phase 1 and Phase 2, with the exception of certain reagents that expire after a period of time, a two-month supply of consumable items, which is the time it takes to purchase new consumables

immediately after procurement, will be included.

(7) Implementation Schedule

This project will be implemented in two phases on a hospital-by-hospital basis. Comparisons of the five target hospitals were done as part of onsite surveys, identifying two hospitals which were particularly poorly equipped. These two hospitals will be given priority and will be covered in Phase 1. Phase 1 will cover Kirovgrad Oblast Children Clinical Hospital and Lugansk Oblast Children Clinical Hospital, while Phase 2 will cover Kharkiv Oblast Children Clinical Hospital No.1, Dnepropetrovsk Oblast Children Clinical Hospital, and Donetsk Oblast Children Clinical Hospital.

2-2-2 Basic Plan

The five hospitals in this project (Kirovgrad Oblast Children Clinical Hospital, Lugansk Oblast Children Clinical Hospital, Kharkiv Oblast Children Clinical Hospital No.1, Dnepropetrovsk Oblast Children Clinical Hospital, and Donetsk Oblast Children Clinical Hospital) are hospitals that were established 20 to 34 years ago, and since they are equipped with radiation protection measures, plumbing and power necessary to run a hospital, they present no problems as target hospitals of this project.

As a result of surveying the five hospitals, it was confirmed that, owing to the aid provided by the central and oblast governments from the time of request of this project in 2001 to the present (2006), some new medical equipment had been procured. However, as it stands there is a lack of equipment for basic diagnoses and treatment, and much equipment is still decrepit.

For this reason, based on the basic policy of this project, the project shall aim to reinforce the pediatric services provided in each oblast by procuring equipment necessary for basic diagnoses and treatment that would make diagnoses and treatment for pediatric patients possible within the target hospitals, i.e. allow them to function as destinations for diagnoses and treatment within each oblast instead of merely transferring patients to top-tier hospitals in Kiev with some exception in time of special diagnoses and treatment.

(2) Equipment plan

The equipment plan will be drafted according to the equipment selections processes (Process 1: Determination of the equipment groups and project equipment; Process 2: Determination of equipment quantities and specifications) stated below.

Process 1：Determination of the equipment groups and project equipment.

As the result of an analysis performed on the data gathered during the on-site surveys and based on the basic policy of the project, as well as the requests of the hospitals, much of the equipment in the five groups shown in Table 1 was found to have been superannuated and that some of the pieces were out of order. The project thus aims to strengthen the pediatric medical service functions by procuring basic diagnostic and treatment equipment in these 5 groups.

Table 2-1 Basic Plan

Group	Department	Main Equipment
A	Operating Theater	Operating Table, Operating Light, Suction Unit, Operating Microscope, Defibrillator
B	Intensive Care Unit	Patient Monitor, Infant Incubator, Syringe Pump, Ventilator, Pulse Oxymeter, Infusion Pump, Infant Warmer, Ultrasonic Neblizer
C	Laboratory Department	Centrifuge(Table top), Autoclave, Hematology Analyser, Water Bath, Spectrophtometer, Incubator, PH Meter,Centrifuge(Hematocrit)
D	Imaging Diagnosis	CT Scanner, X-Ray Apparatus (General, Mobile, Dental, Fluoroscope), Ultrasound Diagnostic Apparatus (Potable, Doppler)
E	Others	Electrocardiograph, Spirometer, Autoclave, Sterilizer, Bronchoscope, Gastro Fiberscope, Cystoscope, Urethroscope

Of the requested equipment, that which falls in any of the following categories was eliminated. The results of the analysis are shown in the analytical result of Process 1 in Table 2-41.

(1) Equipment that does not belong to any of the five groups listed above.

(2) Equipment that is believed to be procurable without an outside aid.

(3) Equipment that is deemed to make only small contributions toward the realization of the project effects because of their limited benefit.

(4) Equipment that is manufactured by only a small number of manufacturers and fails to meet the scheme of Japanese General Grant Aid Program.

(5) Other（such as equipment that was included in the equipment proposal made by the Japanese side but was not requested).

1) Kharkiv Oblast Children Clinical Hospital No.1

Throughout the on-site surveys and discussions, requests were submitted by 19 departments. In accordance with the selection policy described earlier, four of these departments, consisting of Immunological Laboratory, Allergy, Pulmonology and Others (Generator), were eliminated. As a result, the following 15 departments are considered for the project.

Consequently, seven of the initially requested 43 equipment items were deleted. Thirty six equipment items will thus be considered for procurement.

Table 2-2 Kharkiv Oblast Children Clinical Hospital No.1

NO.	Group	Department	NO.	Group	Department
1	A	Thorax Abdominal Surgery	9	B	Neonatal Surgery
2	A	Stomatological Surgery	10	C	Laboratory
3	A	Operation Theater	11	C	Immunology Center
4	A	Purent Surgery	12	D	X-Ray
5	B	ICU	13	E	Functional Diagnostic
6	B	NICU	14	E	Endoscopy
7	B	Neonatal Pathology	15	E	CSSD
8	B	Oncology			

2) Dnepropetrovsk Oblast Children Clinical Hospital

Throughout the on-site surveys and discussions, requests were submitted by 20 departments. In accordance with the selection policy described earlier, six of these departments, consisting of Traumatology Center, Cardiology, Neurosurgery, Policlynic, Pulmonology and Urology, were eliminated. As a result, the following 14 departments will be considered for the project:

Consequently, 11 of the initially requested 46 equipment items were deleted. Thirty five equipment items will thus be considered for procurement.

Table 2-3 Dnepropetrovsk Oblast Children Clinical Hospital

NO.	Group	Department	NO.	Group	Department
1	A	Anesthesiology	8	C	Laboratory
2	A	Operation Theater	9	D	X-Ray
3	A	Scheduled Surgery	10	D	Ultrasound
4	A	Policlynic	11	E	Endoscopy
5	B	ICU	12	E	Nefrology
6	B	Urgent Surgery 2	13	E	Functional Diagnostic
7	B	Infectious Diseases	14	E	CSSD

3) Kirovgrad Oblast Children Clinical Hospital

Throughout the on-site surveys and discussions, requests were submitted by 16 departments. In accordance with the selection policy described earlier, four of these departments, consisting of ENT, Ophthalmology, Neurology and Others（Generator）, were eliminated. As a result, the following 12 departments will be considered for the project:

Consequently, 16 of the initially requested 59 equipment items were deleted. Thirty six equipment items will thus be considered for procurement.

Table 2-4 Kirovgrad Oblast Children Clinical Hospital

NO.	Group	Department	NO.	Group	Department
1	A	Operating Theater	7	B	NICU/Neonatal Pathology
2	A	Surgery	8	C	Laboratory
3	A	Traumatology	9	D	X-Ray
4	A.B	ICU/Anesthesia	10	D	Ultrasound
5	B	Hematology	11	E	Endoscopy
6	B	Pulmonology	12	E	Phisioth./Funct. Diagnostic

4) Donetsk Oblast Children Clinical Hospital

Throughout the on-site surveys and discussions, requests were submitted by 18 departments. In accordance with the selection policy described earlier, two of these departments, consisting of Neurology and Pathology, were eliminated. As a result, the following 16 departments will be considered for the project:

Consequently, 30 of the initially requested 66 equipment items were deleted. Forty three equipment items will thus be considered for procurement

Table 2-5 Donetsk Oblast Children Clinical Hospital

NO.	Group	Department	NO.	Group	Department
1	A	Operation (Scheduled)	9	B	Hemodialysis
2	A	Operation (Urgent)	10	B.E	ENT
3	A	Anesthesiology	11	C	Laboratory
4	A	Ophthalmology	12	D	X-Ray
5	B	ICU	13	D	Ultrasound
6	B	NICU	14	E	Cardiology, Nefrology
7	B	Pulmonology	15	E	Urology
8	B	Surgery (Oncology)	16	E	Endoscopy

5) Lugansk Oblast Children Clinical Hospital

Throughout the on-site surveys and discussions, requests were submitted by 23 departments. In accordance with the selection policy described earlier, three of these departments, consisting of Polyclinic, Neurology and Pathological Anatomy, were eliminated. As a result, the following 20 departments will be considered for the project:

Consequently, 26 of the initially requested 70 equipment items were deleted. Forty four equipment items will thus be considered for procurement.

Table 2-6 Lugansk Oblast Children Clinical Hospital

NO.	Group	Department	NO.	Group	Department
1	A	Traumatology	11	B.D	Neonatal Pathology
2	A	Ophthalmology	12	B.E	Toxicological ICU
3	A.B	ICU	13	B.E	Pulmonology
4	A.B	Scheduled Operation	14	C	Laboratory
5	A.B.E	Urgent Operation	15	D	X-Ray
6	A.E	Urology	16	D	Functional Diagnostic
7	B	Gastroenterology	17	E	ENT
8	B	Hematology	18	E	Cardiology
9	B	Neurology	19	E	Infection Diagnostic
10	B	NICU	20	E	CSSD

Process 2：Determination of Equipment Quantities and Specifications

The results of the analysis performed on the departments and equipment required at the hospitals in Process 1 in the preceding section are shown in Table 2-7. Quantities of major equipment by department are analyzed in Process 2, based on the criteria of quantity determination. At some of the hospitals, equipment groups overlap across some departments. Analysis was therefore performed on a hospital by hospital basis to take account of individual situations. Moreover, pieces of equipment whose main body is identical but which use different accessories were treated as separate equipment items for the computation of required quantities. Based on the foregoing, analytical results are shown for each of the hospitals as follows :

Table 2-7 Criteria for the Quantities and Specifications of Major Types of Equipment in Each of the Departments in the Project

Group	Department	Criteria for Quantities and Specifications of Major Equipment
A	Operating Theater	1) Based on the number of surgeries performed under general anesthesia at each of the hospitals, the number of operating rooms is determined. One anesthesia apparatus is planned for each of the operating rooms. Accordingly, the same number of operating tables, operating lights, suction units, and electrosurgical units are planned. 2) One operating table (Orthopedic) will be planned for each hospital that is determined to be in need of one. Accordingly, the same number of operating lights, suction units, and electrosurgical units will be planned. 3) One suction unit (table top) is planned for every three operating rooms at each of the hospitals. In addition, one suction unit (table top) is planned for every 20 beds in each of the specialized wards. 4) Operation lights (mobile), operating microscopes and defibrillators will be shared as much as possible. The quantity to be planned equals the quantity of existing equipment that does not operate properly, due to old age. 5) One laparoscope set is planned for each of three hospitals where doctors with clinical experience are stationed.
B	Intensive Care Unit	The needed quantities of equipment at each of the hospitals are studied by including the number of units of existing equipment. Plans are made, based on the following criteria: 1) The planned quantities of infant incubators and those of infant warmers are six units each for every five beds in NICUs, one unit each for every three beds in Neonatal Pathology, and between one and two units each in other ICUs and specialized wards, based on the existing equipment and the number of beds. 2) One unit of infant incubator (transport) is planned at each of the three hospitals that have Neonatal Pathology. 3) The planned quantities of patient monitors and those of pulse oxymeters are seven units each for every ten beds in ICUs and NICUs, three units each for every ten beds in Neonatal Pathology, and between one and two units each in specialized wards, based on the existing equipment and the number of beds. 4) The planned quantities of syringe pumps and those of infusion pumps are six units each for every five beds in ICUs and NICUs, and between one and two units each in other ICUs and specialized wards, based on the existing equipment and the number of beds. 5) One suction unit (table top) is planned for every four beds in NICUs and ICUs, based on the status of existing equipment at each of the hospitals. 6) The planned quantities of ventilators are seven units for every ten beds in ICUs and NICUs, and between one and two units in specialized wards, based on the existing equipment and the number of beds. 7) One phototherapy unit and one ultrasonic nebulizer will be procured for every three beds in NICUs, one unit each to every ten beds in Neonatal Pathology, and one unit each to specialized wards, based on the existing equipment and the number of beds.
C	Laboratory Department	1) Eight microscopes are planned for each laboratory department, based on the number of rooms or the number of laboratory technicians in each laboratory department. 2) Quantities will be planned for centrifuges (table top), centrifuges (hematocrit), hematology analyzers, water bathes, autoclaves, laboratories, pH meters and incubators, based on the quantities of decrepit and improperly working equipment that is currently in use.

D	Imaging Diagnosis	1) As a general rule, one X-ray apparatus (general) will be procured at each of the hospitals that requested one, and shared among multiple departments. However, two units will be planned for hospitals where sharing is not possible, due to department locations in multiple buildings. 2) As a general rule, one X-ray apparatus (mobile) will be given to each of the hospitals, to be shared among different departments. However, two to three units will be planned for hospitals where sharing is not possible, due to department locations in multiple buildings. 3) One X-ray apparatus (dental) will be planned at hospitals that have pediatric dentistry. 4) One X-ray apparatus (fluoroscope) is planned for each of the two hospitals where existing equipment is out of order. 5) Quantities of ultrasound diagnostic apparatus and those of ultrasound diagnostic apparatus (portable) will be planned to replace the equipment that does not operate properly, due to old age. 6) Regarding ultrasound diagnostic apparatus (Doppler), one unit each with three different types of probes will be planned for each hospital by taking consideration of the hospitals, departments and the locations of their installation. 7) One CT scanner will be planned for Kharkiv and Lugansk, which requested the scanner.
E	Others	1) Autoclaves (laboratory) will have the total sterilization volume of 1,000 liters. The planned quantity will be the number of units in shortage, which is determined based on the number of existing units that are operating properly at each of the hospitals. 2) Electrocardiographs, spirometers, autoclaves, sterilizers, bronchoscopes, gastro fiberscopes, cystoscopes and rectoscopes (rigid) will be procured in quantities that correspond to the quantities of equipment that does not operate properly, due to old age.

1) Kharkiv Oblast Children Clinical Hospital No. 1

Thirty six equipment items will be procured in 15 departments. Major equipment types in each of the departments (equipment groups) were analyzed, based on the criteria shown in Table 2-7 in the preceding section. The results of the analysis are as follows:

A. Operating Theater

The hospital performed 5,500 surgeries during 2005, 2,631 of which were performed under general anesthesia. Considering that surgical rooms are operative 240 days per year, the average number of surgeries performed under general anesthesia was approximately 11 per day. Functions of the six operation rooms are hoped to be strengthened, assuming the daily rate of two surgeries per operating room. Total of six anaesthesia apparatuses (with a ventilator) are planned for each of the four general operation rooms, one Purulent surgery operation room and one Stomatological surgery operation room. Accordingly, the same number of operating tables, operating lights, electrosurgical units and suction units will be planned. In addition two dental units for stomatological surgery diagnoses will be installed in the stomatological surgery

operation room. For the Thorax Abdominal Surgery, one operation light (mobile), one rectoscope (rigid) and one cystoscope (rigid), all of which are existing but are extremely dilapidated, will be planned so as to strengthen the department's diagnosis function.

B. Intensive Care Unit

In all departments that provide intensive care services, namely ICU, NICU, Neonatal Pathology, Oncology and Neonatal Surgery, apparatuses that are necessary for the post-op management of pediatric surgery patients, including newborns, and the treatment of newborn and premature babies will be planned, based on Table 2-7.

Table 2-8 ICU

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Patient Monitor	**6**	2	15	11	7	**5**
Syringe Pump	**6**	2	15	15	13	**7**
Pulse Oxymeter	**2**	2	15	11	7	**2**
Infusion Pump	**6**	0	15	15	13	**6**
Suction Unit, table top	**3**	1	15	4	3	**3**

Table 2-9 NICU

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infant Incubator	**6**	2	12	14	10	**5**
Patient Monitor	**10**	3	12	8	5	**4**
Syringe Pump	**10**	4	12	12	8	**5**
Ventilator	**2**	5	12	8	3	**3**
Pulse Oxymeter	**6**	0	12	8	5	**1**
Infusion Pump	**6**	0	12	12	8	**3**
Infant Warmer	**9**	2	12	14	10	**5**
Phototherapy Unit	**6**	0	12	4	4	**4**
Ultrasonic Nebulizer	**1**	0	12	4	4	**4**

Table 2-10 Neonatal Pathology

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Patient Monitor	**1**	0	30	2	2	**1**
Syringe Pump	**2**	0	30	2	2	**2**
Pulse Oxymeter	**2**	0	30	2	2	**1**
Infant Warmer	**2**	0	30	1	1	**1**
Phototherapy Unit	**1**	0	30	3	3	**3**

Table 2-11 Oncology

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Patient Monitor	**2**	0	20	1	1	**1**
Syringe Pump	**2**	0	20	2	2	**1**
Infusion Pump	**2**	0	20	2	2	**1**

Table 2-12 Neonatal Surgery

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Patient Monitor	**1**	0	30	2	1	**1**
Syringe Pump	**2**	0	30	2	2	**2**
Infant Warmer	**2**	0	30	1	1	**1**
Phototherapy Unit	**1**	0	30	1	1	**1**

In addition, one defibrillator to treat cardiac arrest is planned for the ICU.

C. Laboratory Department

Regarding basic test-related equipment for the Laboratory and the Immunological Laboratory, equipment whose function has deteriorated as the result of aging will be replaced. Three centrifuges (table top) and one centrifuge (table top), as well as two autoclaves (laboratory) and one autoclave (laboratory), will be planned for the Laboratory and the Immunological Laboratory respectively. Six microscopes and two microscopes will also be planned for the respective laboratories in proportion to the number of laboratory rooms and that of technicians. In addition, two water bathes, one incubator and one pH meter will be planned for each of the two laboratories. One sterilizer will be planned for the Immunological Laboratory because the existing one is out of order and not operable. As for spectrophotometer, the hospital performed 45,121 urine tests in 2005. A new spectrophotometer is planned to be added to the existing one in the Laboratory to provide adequate capacity to perform approximately 180 tests per day.

D. Imaging Diagnosis

The Imaging Diagnosis will be given one X-ray apparatus (mobile & dental) to replace the one that is broken and unusable, and one CT scanner, which will be a newly procured apparatus.

As for the CT scanner, roughly 5,000 pediatric patients are said to have required a CT scan in 2005 in the Kharkiv oblast. About 950 of these pediatric patients received a diagnosis, using one of three CT scanners available at such institutions as adult hospitals in the oblast. Two hundred ten of these patients were patients of Kharkiv Oblast Children Clinical Hospital No. 1. The remaining patients, numbering approximately 700, were patients of an oblast hospital that specializes in pediatric internal medicine and a municipal pediatric hospital, both of which are located in Kharkiv city and have no CT scanner. Once Kharkiv Oblast Children Clinical Hospital No. 1 owns a CT scanner, it will be able to admit patients of other pediatric hospitals in the Kharkiv oblast. This will reduce the burden on other pediatric hospitals, as a pediatrician will no longer have to accompany a patient. Pediatric medical services in the oblast will also

be strengthened at the same time.

E. Others

The hospital performed 46,738 ultrasound diagnoses in 2005, 6,462 of which were for cardiovascular diagnoses. To handle these volumes, one ultrasound diagnostic apparatus (Doppler) and one spirometer for the measurement of breathing capacity will be planned for the Functional Diagnostic Department. One bronchoscope (rigid) and one gastro fiberscope will also be planned for the Endoscopy Department.

As a way to strengthen the sterilization function, which is important for hospitals. two autoclaves, as well as two sterilizers to replace the ones that are out of order, will be planned. There is an approximately 440 liter of sterilization volume shortage being encountered by the currently operating existing units. The needed sterilization volume is approximately 1,000 liters.

2) Dnepropetrovsk Oblast Children Clinical Hospital

Thirty five equipment items will be procured in 14 departments. Major equipment types in each of the departments (equipment groups) were analyzed, based on the criteria shown in Table 2-7 in the preceding section. The results of the analysis are as follows:

A. Operating Theater

The hospital performed 5,466 surgeries during 2005, 2,752 of which were performed under general anesthesia. Considering that surgical rooms are operative 240 days per year, the average number of surgeries performed under general anesthesia was approximately 11 per day. Functions of the six operation rooms are hoped to be strengthened, assuming the daily rate of two surgeries per operating room. Total of six anaesthesia apparatuses is planned for each of the six operation rooms. Accordingly, the same number of operating tables, operating lights, suction units and electrosurgical units will be planned. In addition, one operating table (orthopedic), one operating light, one suction unit and one electrosurgical unit will be planned for the Orthopaedics Department. Furthermore, one operation light (mobile) and one defibrillator will be planned for the General Diagnosis Department. One X-ray apparatus (mobile), one laparoscope set and one defibrillator will also be planned for sharing among operation rooms. Additionally, following items will be planned for other departments.

Table 2-13 Anesthesiology

Equipment	**Requested**	Existing	OP Room	Need	Shortage	**Plan**
Suction Unit, table top	**6**	0	8	3	3	**3**

Table 2-14 Scheduled Surgery

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Syringe Pump	**15**	0	30	2	2	**2**

B. Intensive Care Unit

In all departments that provide intensive care services, namely ICU, Urgent Surgery 2 and Infectious Diseases, apparatuses that are necessary for the post-op management of pediatric surgery patients, including newborns, and the treatment of newborn and premature babies will be planned, based on Table 2-7.

Table 2-15 ICU

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infant Incubator	**2**	0	12	2	2	**2**
Patient Monitor	**12**	1	12	8	6	**4**
Pulse Oxymeter	**6**	1	12	8	6	**2**
Infusion Pump	**20**	1	12	12	4	**4**
Phototherapy Unit	**1**	0	12	1	1	**1**

Table 2-16 Urgent Surgery 2

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infusion Pump	**8**	0	35	2	2	**2**

Table 2-17 Infectious Diseases

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infusion Pump	**8**	0	30	2	2	**2**
Phototherapy Unit	**1**	0	30	1	1	**1**

In addition, one X-ray apparatus (mobile), one electrocardiograph and one defibrillator will be planned for sharing in ICU.

C. Laboratory Department

Regarding basic test-related equipment for the Laboratory, equipment whose function has deteriorated as the result of aging will be replaced. Four centrifuges (table top) and one centrifuge (hematocrit) will be procured, as well as eight microscopes in proportion to the

number of laboratory rooms and that of lab technicians. In addition, three each of water bathes and pH meters will be planned. One hematology analyzer will be planned, based on the fact that the hospital performed 132,000 blood tests in 2005, averaging 528 tests per day. Three spectrophotometers will also be planned in light of the fact that the hospital performed 60,544 urine tests in 2005, averaging 242 tests per day.

D. Imaging Diagnosis

The hospital is housed in two buildings, making it not possible for X-ray apparatuses to be shared. The hospital performed X-ray photography 16,649 times in 2005. In light of the fact that the existing equipment is 20 years old, two X-ray apparatuses (general) will be planned in addition to one X-ray apparatus (mobile) for the building in which operating rooms and the ICU are situated. The Ultrasound Department performed 76,177 ultrasound diagnoses in 2005. The existing ultrasound diagnostic apparatus has grown old. To enable the department to handle this volume, one ultrasound diagnostic apparatus will be planned. In addition, one ultrasound diagnostic apparatus (Color Doppler) will be planned to handle cardiovascular diagnoses, which numbered 7,245.

E. Others

For the Endoscopy Department, one bronchoscope (fiber), one gastro fiberscope and one cystoscope (fiber) will be planned. For the Urology Department, one cystoscope (rigid) and two suction units (table top) will be planned. For the
Functional Diagnostic Department, two operation lights (mobile), one electrocardiograph and one spirometer will be planned for CSSD.

There is an approximately 382 liter of sterilization volume shortage that is encountered by the currently-operating existing units. The needed sterilization volume is approximately 1,000 liters. In order to strengthen the sterilization function, which is important for hospitals, two autoclaves, as well as two sterilizers to replace the existing ones that are out of order, will be planned.

3) Kirovgrad Oblast Children Clinical Hospital

Forty three equipment items will be procured in 12 departments. Major equipment types in each of the departments (equipment groups) were analyzed, based on the criteria shown in Table 2-7 in the preceding section. The results of the analysis are as follows:

A. Operating Theater

The hospital performed 3.007 surgeries during 2005, 1,061 of which were performed under general anesthesia. Considering that surgical rooms are operative 240 days per year, the average number of surgeries performed under general anesthesia was approximately five per day. Functions of the three operation rooms are hoped to be strengthened, assuming the daily rate of two surgeries per operating room. One anaesthesia apparatus (with ventilator) is planned for each of the three operation rooms for a total of three. Accordingly, the same number of operating tables, operating lights, suction units and electrosurgical units will be planned.

In addition, one operating table (orthopedic), one operating light, one suction unit and one electrosurgical unit will be planned for the operating room of the Orthopaedics Department. One laparoscope set will be planned as the hospital has a doctor who is capable of using it. Furthermore, one operating microscope, one rectroscope (rigid) and one bronchoscope (fiber) will be planned for sharing. Two autoclaves will be planned at the ratio of one unit per two operation rooms to replace the existing aged units.

For the Traumatology Center, one operating light and one X-ray apparatus (mobile) will be planned. The Surgery Department will have one operation light (mobile), one cystoscope (fiber) and one cystoscope (rigid), as well as one defibrillator for sharing. In addition, the following equipment is planned so as to meet the requirements of 40 beds:

Table 2-18 Surgery

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Patient Monitor	**8**	0	40	2	2	**2**
Suction Unit, table top	**2**	0	40	2	2	**2**

B. Intensive Care Unit

In all departments that provide intensive care services, namely ICU/Anesthesia, Hematology, Pulmonology, and NICU/Neonatal Pathology, apparatuses that are necessary for the post-op management of pediatric surgery patients, including newborns, and the treatment of newborn and premature babies will be planned, based on Table 2-7.

Table 2-19 ICU

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infant Incubator	**1**	0	6	2	2	**1**
Patient Monitor	**4**	1	6	5	3	**2**
Syringe Pump	**4**	2	6	6	4	**2**
Ventilator	**4**	1	6	4	3	**3**
Pulse Oxymeter	**4**	1	6	5	3	**1**
Infusion Pump	**4**	0	6	6	4	**2**
Infant Warmer	**1**	0	6	2	2	**1**
Ultrasonic Nebulizer	**2**	0	6	2	2	**2**

Table 2-20 Hematology

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Syringe Pump	**3**	0	30	2	2	**2**
Suction Unit, table top	**2**	0	30	2	2	**2**

Table 2-21 Pulmonology

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Syringe Pump	**1**	0	40	2	2	**1**
Pulse Oxymeter	**3**	0	40	2	2	**2**
Infusion Pump	**1**	0	40	2	2	**1**
Ultrasonic Nebulizer	**6**	0	40	2	2	**2**
Spirometer	**2**	1	40	1	1	**1**
Suction Unit, table top	**1**	0	40	2	2	**2**

Table2- 22 NICU/Neonatal Pathology

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infant Incubator	**2**	3	6	7	3	**1**
Patient Monitor	**5**	0	6	4	4	**3**
Syringe Pump	**4**	2	6	6	4	**4**
Ventilator	**4**	2	6	4	2	**2**
Pulse Oxymeter	**5**	0	6	4	4	**1**
Infant Warmer	**2**	1	6	7	3	**2**
Phototherapy Unit	**3**	0	6	2	2	**2**
Ultrasonic Nebulizer	**1**	0	6	2	2	**2**
Suction Unit, table top	**3**	0	62	2	2	**2**

In addition, one infant incubator (transport) will be planned for NICU/Neonatal Pathology for premature babies who are transferred from obstetric hospitals.

Table 2-23 NICU/Neonatal Pathology

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infant Incubator	**5**	0	30	9	8	**5**
Patient Monitor	**1**	0	30	6	6	**3**
Syringe Pump	**4**	2	30	2	2	**2**
Ventilator	**2**	0	30	1	1	**1**
Pulse Oxymeter	**1**	0	30	6	6	**3**
Infant Warmer	**3**	1	30	9	8	**3**
Phototherapy Unit	**8**	0	30	3	3	**3**
Suction Unit, table top	**4**	0	30	2	2	**2**

C. Laboratory Department

Regarding basic test-related equipment for the Laboratory, equipment whose function has deteriorated as the result of aging will be replaced. Four suction units (table top), one centrifuge (hematocrit), eight microscopes in proportion to the number of laboratory rooms and that of lab technicians, two incubators, one water bath, one pH meter and one sterilizer will be planned. The hospital performed 69,000 blood tests in 2005, averaging 276 tests per day. To handle this volume, one hematology analyzer will be planned. Two spectrophotometers will also be planned in light of the fact that the hospital performed 73,504 urine tests in 2005, averaging 294 tests per day.

D. Imaging Diagnosis

The hospital performed X-ray photography 14,021 times in 2005. All of the existing equipment is more than 20 years old and extremely dilapidated. In light of this situation and the fact that the number of patients has increased as the result of a hike in the age limit of pediatric patients, one of each type of X-ray apparatuses (general, mobile, dental and fluoroscope) will be planned. The Ultrasound Department performed 15,541 ultrasound diagnoses in 2005, 1,496 of which were cardiovascular diagnoses. To enable the department to handle this volume, one ultrasound diagnostic apparatus (Doppler) will be planned.

E. Others

One gastro fiberscope for the Endoscopy Department, and four ultrasound nebulizers, five electrocardiographs and one spirometer for the Phisioth./Funct. Diagnostic Department will be planned, assuming the patient size of 100.

4) Donetsk Oblast Children Clinical Hospital

Thirty six equipment items will be procured in 16 departments. Major equipment types in each of the departments (equipment groups) were analyzed, based on the criteria shown in Table 2-7 in the preceding section. The results of the analysis are as follows:

A. Operating Theater

The hospital performed 5,314 surgeries during 2005, 1,739 of which were performed under general anesthesia. Considering that surgical rooms are operative 240 days per year, the average number of surgeries performed under general anesthesia was approximately seven per day. Assuming the daily rate of two surgeries per operating room, total of four anaesthesia apparatuses are planned, each to be installed in the two operation rooms of the Operation (Scheduled), one room of the Operation (Urgent) and one operation room of Ophthalmology. Accordingly, the same number of operating lights, suction units and electrosurgical units will be planned. In addition, one operating microscope for the Ophthalmology Department, and a total of three defibrillators, each installed in the three operating rooms other than that of the Ophthalmology operation room, will be planned. Additional equipment is planned, based on the following results of analysis:

Table 2-24 Anesthesiology

Equipment	**Requested**	Existing	OP Room	Need	Shortage	**Plan**
Pulse Oxymeter	**4**	0	8	2	2	**2**
Infusion Pump	**3**	0	8	6	6	**6**

Table 2-25 Operation (Urgent)

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Ultrasonic Nebulizer	**1**	0	50	1	1	**1**

B. Intensive Care Unit

In all departments that provide intensive care services, namely ICU, NICU, Pulmonology and Surgery, apparatuses that are necessary for the post-op management of pediatric surgery patients, including newborns, and the treatment of newborn and premature babies will be planned, based on Table 2-7.

Table 2-26 ICU

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Ultrasonic Nebulizer	**4**	0	12	3	3	**3**
Suction Unit, table top	**1**	2	12	3	1	**1**
Infant Incubator	**1**	0	12	1	1	**1s**

Table 2-27 NICU

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infant Incubator	**6**	4	12	14	6	**4**
Patient Monitor	**1**	3	12	8	4	**2**
Syringe Pump	**5**	9	12	12	3	**3**
Ventilator	**2**	6	12	8	2	**2**
Pulse Oxymeter	**2**	1	12	8	4	**2**
Infant Warmer	**2**	4	12	14	6	**2**
Phototherapy Unit	**2**	1	12	3	2	**2**

Table 2-28 Pulmonology

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Ultrasonic Nebulizer	**1**	0	50	2	2	**2**

Table 2-29 Surgery

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infusion Pump	**1**	0	30	1	1	**1**

Table 2-30 Hemodialysis

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Patient Monitor	**1**	0	-	2	1	**1**
Syringe Pump	**2**	1	4	4	3	**1**
Infusion Pump	**4**	0	4	4	3	**2**

Table 2-31 ENT

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Suction Unit, table top	**2**	0	30	2	2	**2**

Additionally, one spirometer for the measurement of the breathing capacity in the Pulmonology Department, and two audiometers that are necessary for the measurement of hearing in the ENT will be planned.

C. Laboratory Department

Regarding basic test-related equipment for the Laboratory, equipment whose function has deteriorated as the result of aging will be replaced. Two sterilizers, four centrifuges (table top),

three autoclaves (laboratory), eight microscopes in proportion to the number of laboratory rooms and that of lab technicians, and one pH meter will be planned.

D. Imaging Diagnosis

In 2005, the hospital performed X-ray photography 7,126 times and X-ray fluroscopic 983 times. All of the existing X-ray equipment of the Imaging Diagnosis Department is more than 20 years old and extremely dilapidated. In light of this situation and the fact that the number of patients has increased as the result of a hike in the age limit of pediatric patients, one of each types of X-ray apparatus (general, mobile and fluoroscope) will be planned, The Ultrasound Department performed 44,004 ultrasound diagnoses in 2005, 1,812 of which were cardiovascular diagnoses. To enable the department to handle this volume, one ultrasound diagnostic apparatus (Doppler) will be planned.

E. Others

For the 40 beds in the Cardiology and Nephrology Departments, two electrocardiographs and one infusion pump are planned. In addition, one cystoscope (fiber) for the Urology Department, and one operation light (mobile), one rectoscope (rigid), one rectoscope (fiber), one bronchoscope (rigid) and one gastro fiberscope are planned for the Endoscopy Department.

5) Lugansk Oblast Children Clinical Hospital

Forty four equipment items will be procured in 20 departments. Major equipment types in each of the departments (equipment groups) were analyzed, based on the criteria shown in Table 2-7 in the preceding section. The results of the analysis are as follows. At this hospital, operation/treatment rooms and ICU are closely connected as departments that are covered by this project. Some of the equipment included in the project will thus be shared between the two groups.

A. Operating Theater

The hospital performed 3,315 surgeries during 2005, 1,669 of which were performed under general anesthesia. Considering that surgical rooms are operative 240 days per year, the average number of surgeries performed under general anesthesia was approximately seven per day. Assuming the daily rate of two surgeries per operating room, a total of four anaesthesia apparatuses for general anesthesia are planned for each of the two Scheduled Operation rooms,

one Urgent Operation room, and one Urology Operation room. Accordingly, the same number of operating lights, operating tables, suction units and electrosurgical units will be planned. In addition, one operation light (mobile) and one defibrillator, as well as one operating microscope for ophthalmology surgeries, will be planned for one of the Scheduled Operation room, and one rectoscope (rigid) for Urgent Operation will also be planned. Furthermore, one operating table (orthopedic), one operating light, one suction unit, and one electrosurgical unit will be planned for Traumatology, major part of whose work is orthopedic surgery. Two operation lights (mobile) and one cystoscope (fiber) will be planned for the diagnosis room of Urology. The hospital's Urgent Operation has a doctor who is capable of using a laparoscope set. One laparoscope set, together with one ventilator, will thus be planned. In addition, the following equipment is planned:

Table 2-32 Scheduled Operation

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Patient Monitor	**1**	0	20	2	2	**1**
Syringe Pump	**2**	0	20	2	2	**2**
Pulse Oxymeter	**2**	0	20	2	2	**1**
Suction Unit, table top	**2**	0	20	1	1	**1**

B. Intensive Care Unit

In all departments that provide intensive care services, namely ICU, NICU, Gastroenterology, Hematology, Neurosurgery, NICU, Neonatal Pathology, Toxicological ICU and Pulmonology, apparatuses that are necessary for the post-op management of pediatric surgery patients, including newborns, and the treatment of newborn and premature babies will be planned, based on Table 2-7.

Table 2-33 ICU

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infant Incubator	**2**	0	15	1	1	**1**
Patient Monitor	**6**	1	15	11	6	**4**
Syringe Pump	**10**	1	15	15	14	**14**
Ventilator	**6**	7	15	11	4	**4**
Pulse Oxymeter	**3**	4	15	11	6	**2**
Ultrasonic Nebulizer	**2**	0	15	4	4	**4**
Suction Unit, table top	**3**	1	15	4	3	**3**

Table 2-34 Pulmonology

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Suction Unit, table top	**1**	1	40	2	1	**1**

Table 2-35 Hematology

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infusion Pump	**0**	0	25	2	2	**2**

Table 2-36 Neurosurgery

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Patient Monitor	**1**	0	20	2	2	**1**
Pulse Oxymeter	**2**	0	20	2	2	**1**
Ultrasonic Nebulizer	**1**	0	20	1	1	**1**

Table 2-37 NICU

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infant Incubator	**8**	0	12	14	7	**6**
Patient Monitor	**2**	3	12	8	5	**3**
Syringe Pump	**10**	4	12	12	8	**8**
Ventilator	**6**	5	12	8	3	**3**
Pulse Oxymeter	**6**	0	12	8	5	**2**
Infant Warmer	**2**	7	12	14	7	**1**
Phototherapy Unit	**3**	1	12	4	3	**3**
Ultrasonic Nebulizer	**4**	0	12	4	4	**4**
Suction Unit, table top	**3**	0	12	3	3	**3**

Table 2-38 Neonatal Pathology

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Infant Incubator	**8**	4	25	8	4	**3**
Infant Warmer	**1**	0	25	8	4	**1**
Phototherapy Unit	**3**	0	25	3	3	**3**
Ultrasonic Nebulizer	**3**	0	25	3	3	**3**
Suction Unit, table top	**2**	0	25	2	2	**2**

Table 2-39 Toxicological ICU

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Patient Monitor	**6**	0	16	8	7	**4**
Ventilator	**6**	5	16	11	6	**6**
Pulse Oxymeter	**0**	1	16	8	7	**3**
Infusion Pump	**10**	0	16	16	16	**16**
Infant Warmer	**2**	0	16	1	1	**1**
Ultrasonic Nebulizer	**3**	0	16	2	2	**2**
Suction Unit, table top	**4**	1	16	4	3	**3**

Table 2-40 Pulmonology

Equipment	**Requested**	Existing	Beds	Need	Shortage	**Plan**
Ultrasonic Nebulizer	**4**	0	40	2	2	**2**
Suction Unit, table top	**2**	0	40	2	2	**2**

Additionally, one infant incubator for Neurosurgery, one infant incubator (transport) and three suction units for NICU, which works closely with obstetric hospitals, one ultrasound diagnostic apparatus (portable) and one electrocardiograph for Neonatal Pathology, one electrocardiograph for Toxicological ICU, and one bronchoscope (fiber) for Pulmonology are planned.

C. Laboratory Department

Regarding basic test-related equipment for the Laboratory, equipment whose function has deteriorated as the result of aging will be replaced. Two sterilizers, four suction units (table top), two autoclaves (laboratory), eight microscopes in proportion to the number of laboratory rooms and that of lab technicians, four water bathes, three incubators and three pH meters will be planned. The hospital performed 260,000 blood tests in 2005. To handle 520 tests per day, one hematology analyzer will be planned. Two spectrophotometers will also be planned to handle 280 tests per day in light of the fact that the hospital performed 70,000 urine tests in 2005.

D. Imaging Diagnosis

In 2005, the hospital performed general X-ray photography 10,783 times, using three X-ray apparatuses. X-ray fluroscopic was taken 84 times. All of the existing equipment of the Imaging Diagnosis Department is more than 20 years old. In particular, the existing two X-ray apparatuses are extremely dilapidated. In light of this situation and the fact that the number of patients has increased as the result of a hike in the age limit of pediatric patients, two X-ray apparatuses (general), three X-ray apparatuses (mobile) to allow for the expansive hospital ground on which buildings are built away from one another, and one X-ray apparatus (fluoroscope) to replace the extremely dilapidate unit will be planned.

Additionally, one CT scanner is planned. None of the pediatric hospitals in the neighboring oblasts have a CT scanner. Approximately 3,500 pediatric patients are said to have needed a CT diagnosis per year within the Lugansk oblast. Of these patients, approximately 600 received a diagnosis with one of two CT scanners that are available at adult hospitals within the oblast.

Two hundred and ninety five of them were patients of Lugansk Oblast Children Clinical Hospital. Three hundred others were patients of municipal pediatric hospitals located in the city of Lugansk. Once a CT Scanner is procured at this hospital, patients of other pediatric hospitals in the Lugansk oblast can be admitted. This will reduce the burden on other pediatric hospitals, as a pediatrician will no longer have to accompany a patient. At the same time, pediatric medical services in the oblast will also be strengthened.

The Functional Diagnostic Department performed 47,230 ultrasound diagnoses in 2005, 6,405 of which were cardiovascular diagnoses. To enable the department to handle this volume, one ultrasound diagnostic apparatus (Doppler) and one electrocardiograph will be planned.

E. Others

One bronchoscope (rigid) for ENT, one electrocardiograph for Cardiology, and one ultrasonic nebulizer for Infection Diagnostic will be planned.

Two autoclaves will be planned for CSSD to strengthen the sterilization function, which is important for hospitals. There is an approximately 520 liter of sterilization volume shortage encountered by the currently-operating existing units. The needed sterilization volume is approximately 1,000 liters.

In the following pages Table 2-41 shows the analysis results of requested equipment,.

Table 2-41 Examination Results

Requested								*Process 1 : Targeted Department and Equipment*								*Process2 : Quantity and Specifications*							
No.	Equipment	Kharkiv Oblast Children Clinical Hospital No.1	Dnepropetrovsk Oblast Children Clinical Hospital	Kirovgrad Oblast Children Clinical Hospita;	Donetsk Oblast Children Clinical Hospital	Lugansk Oblast Children Clinical Hospital	Total	Equipment	Kharkiv Oblast Children Clinical Hospital No.1	Dnepropetrovsk Oblast Children Clinical Hospital	Kirovgrad Oblast Children Clinical Hospita;	Donetsk Oblast Children Clinical Hospital	Lugansk Oblast Children Clinical Hospital	Total	Decision	No.		Kharkiv Oblast Children Clinical Hospital No.1	Dnepropetrovsk Oblast Children Clinical Hospital	Kirovgrad Oblast Children Clinical Hospita;	Donetsk Oblast Children Clinical Hospital	Lugansk Oblast Children Clinical Hospital	Total
1	ICU Bed	0	4	24	20	8	**56**	ICU Bed	0	0	0	0	0	**0**	②								
2	Infant Incubator	6	2	12	5	17	**42**	Infant Incubator	6	2	11	5	17	**41**		1	Infant Incubator	5	2	7	3	11	**28**
◎	Infant Incubator, Transport	0	0	0	0	1	**1**	Infant Incubator, Transport	0	0	1	0	1	**2**		2	Infant Incubator, Transport	0	0	1	1	1	**3**
3	Patient Monitor	8	19	19	2	14	**62**	Patient Monitor	8	19	19	2	14	**62**		3	Patient Monitor	12	4	10	3	13	**42**
4	Sterilizer, Table Top	2	0	22	9	19	**52**	Sterilizer, Table Top	0	0	0	0	0	**0**	②								
5	Syringe Pump	22	20	16	7	31	**96**	Syringe Pump	22	20	16	7	31	**96**		4	Syringe Pump	17	2	11	4	24	**58**
6	Ventilator	2	0	10	2	20	**34**	Ventilator	2	0	10	2	20	**34**		5	Ventilator	3	0	6	2	15	**26**
7	Pulse Oxymeter	11	8	13	8	13	**53**	Pulse Oxymeter	11	8	13	8	13	**53**		6	Pulse Oxymeter	4	2	7	4	9	**26**
8	Infusion Pump	14	40	5	10	12	**81**	Infusion Pump	14	40	5	10	12	**81**		7	Infusion Pump	10	8	3	10	18	**49**
9	Infant Warmer	13	0	7	4	3	**27**	Infant Warmer	13	0	7	3	0	**23**		8	Infant Warmer, A	7	0	6	2	1	**16**
																9	Infant Warmer, B	0	0	0	1	2	**3**
10	Phototherapy Unit	8	2	11	2	6	**29**	Phototherapy Unit	8	2	11	2	6	**29**		10	Phototherapy Unit	8	2	5	2	6	**23**
11	Neonatal Bed	0	0	0	0	5	**5**	Neonatal Bed	0	0	0	0	0	**0**	②								
12	Neonatal Monitor	12	0	0	1	2	**15**	Neonatal Monitor	0	0	0	0	0	**0**	⑤								
13	Ultrasonic Neblizer	7	0	12	6	19	**44**	Ultrasonic Neblizer	**1**	0	12	6	**18**	**37**	①	11	Ultrasonic Neblizer	4	0	10	6	17	**37**
14	Bilirubin Analyzer	1	0	0	0	1	**2**	Bilirubin Analyzer	0	0	0	0	0	**0**	②								
15	X-Ray Apparatus, General	0	2	1	1	2	**6**	X-Ray Apparatus, General	0	2	1	1	2	**6**		12	X-Ray Apparatus, General	0	2	1	1	2	**6**
16	X-Ray Apparatus, Mobile	1	3	4	1	4	**13**	X-Ray Apparatus, Mobile	1	3	4	1	4	**13**		13	X-Ray Apparatus, Mobile	1	3	2	1	3	**10**
17	X-Ray Apparatus, Dental	1	0	1	0	1	**3**	X-Ray Apparatus, Dental	1	0	1	0	1	**3**		14	X-Ray Apparatus, Dental	1	0	1	0	1	**3**
18	X-Ray Apparatus, Fluoroscope	0	0	1	1	1	**3**	X-Ray Apparatus, Fluoroscope	0	0	1	1	1	**3**		15	X-Ray Apparatus, Fluoroscope	0	0	1	1	1	**3**
19	Ultrasound Diagnostic Apparatus	0	1	0	0	2	**3**	Ultrasound Diagnostic Apparatus	0	1	0	0	**0**	**1**	①	16	Ultrasound Diagnostic Apparatus	0	1	0	0	0	**1**
◎	Ultrasound Diagnostic Apparatus, Portable	0	0	0	0	1	**1**	Ultrasound Diagnostic Apparatus, Portable	0	0	0	0	1	**1**		17	Ultrasound Diagnostic Apparatus, Portable	0	0	0	0	1	**1**
20	Ultrasound Diagnostic Apparatus, Doppler, A	4	1	1	1	1	**8**	Ultrasound Diagnostic Apparatus, Doppler, A	0	0	1	1	1	**3**		18	Ultrasound Diagnostic Apparatus, Doppler, A	0	1	0	1	1	**3**
	Ultrasound Diagnostic Apparatus, Doppler. B							Ultrasound Diagnostic Apparatus, Doppler. B	4	0	0	0	0	**4**		19	Ultrasound Diagnostic Apparatus, Doppler. B	1	0	0	0	0	**1**
	Ultrasound Diagnostic Apparatus, Doppler. C							Ultrasound Diagnostic Apparatus, Doppler. C	0	0	1	0	0	**1**		20	Ultrasound Diagnostic Apparatus, Doppler. C	0	0	1	0	0	**1**
21	Electrocardiograph	0	2	5	2	6	**15**	Electrocardiograph	0	2	5	2	**5**	**14**	①	21	Electrocardiograph	0	2	5	2	4	**13**
22	Electromyograph	0	1	0	0	0	**1**	Electromyograph	0	0	0	0	0	**0**	③								
23	Spirometer	1	2	3	1	0	**7**	Spirometer	1	**1**	3	1	0	**6**	①	22	Spirometer	1	1	2	1	0	**5**
24	Electroencepharograph	1	1	1	1	1	**5**	Electroencepharograph	0	0	0	0	0	**0**	③								
25	Bone Drill	1	0	2	1	1	**5**	Bone Drill	0	0	0	0	0	**0**	②								
26	Laparoscope Set	0	1	1	0	1	**3**	Laparoscope Set	0	1	1	0	1	**3**		23	Laparoscope Set	0	1	1	0	1	**3**
27	Inhalers Unit	0	0	0	0	0	**0**	Inhalers Unit	0	0	0	0	0	**0**	②								
28	Operation Instrument Set	0	3	6	6	2	**17**	Operation Instrument Set	0	0	0	0	0	**0**	②								
29	Centrifuge, Table Top	0	1	7	4	5	**17**	Centrifuge, Table Top	0	0	0	0	0	**0**	⑤								
30	Suction Unit	11	8	11	6	8	**44**	Suction Unit	11	8	11	6	8	**44**		24	Suction Unit	6	7	4	4	5	**26**
◎	Suction Unit, table top	3	7	13	3	18	**44**	Suction Unit, table top	3	7	13	3	18	**44**		25	Suction Unit, table top	3	5	10	3	15	**36**
31	Operating Table	7	8	6	7	5	**33**	Operating Table	7	8	6	7	5	**33**		26	Operating Table	6	6	3	4	4	**23**
32	Operating Light	6	11	9	1	5	**32**	Operating Light	6	11	9	1	5	**32**		27	Operating Light	6	7	5	4	5	**27**
◎	Operation Light, Mobile	1	3	1	1	5	**11**	Operation Light, Mobile	1	3	1	1	5	**11**		28	Operation Light, Mobile	1	3	1	1	4	**10**
33	Operating Microscope	0	0	1	1	1	**3**	Operating Microscope	0	0	1	1	1	**3**		29	Operating Microscope	0	0	1	1	1	**3**
34	Stretcher	0	0	5	4	8	**17**	Stretcher	0	0	0	0	0	**0**	②								
35	Rectoscope, fiber	0	0	0	1	1	**2**	Rectoscope, fiber	0	0	0	0	0	**0**	④								
◎	Rectoscope, rigid	1	0	2	0	1	**4**	Rectoscope, rigid	1	0	2	0	1	**4**		30	Rectoscope, rigid	1	0	1	1	1	**4**
36	Electrosurgical Unit	3	13	7	5	5	**33**	Electrosurgical Unit	3	13	7	5	5	**33**		31	Electrosurgical Unit	6	7	4	4	5	**26**
37	Bed	0	0	40	0	0	**40**	Bed	0	0	0	0	0	**0**	②								
38	Dental Unit	2	0	0	0	1	**3**	Dental Unit	2	0	0	0	**0**	**2**	①	32	Dental Unit	2	0	0	0	0	**2**
39	Audiometer	0	0	2	2	0	**4**	Audiometer	0	0	**0**	2	0	**2**	①	33	Audiometer	0	0	0	2	0	**2**
40	Operating Table, Orthopedic	0	2	1	0	1	**4**	Operating Table, Orthopedic	0	2	1	0	1	**4**		34	Operating Table, Orthopedic	0	1	1	0	1	**3**
41	Defibrillator	1	5	1	3	3	**13**	Defibrillator	1	**4**	1	3	3	**12**	①	35	Defibrillator	1	3	1	3	2	**10**
42	Resuscitator, manual	0	0	1	2	16	**19**	Resuscitator, manual	0	0	0	0	0	**0**	②								

Table 2-41 Examination Results

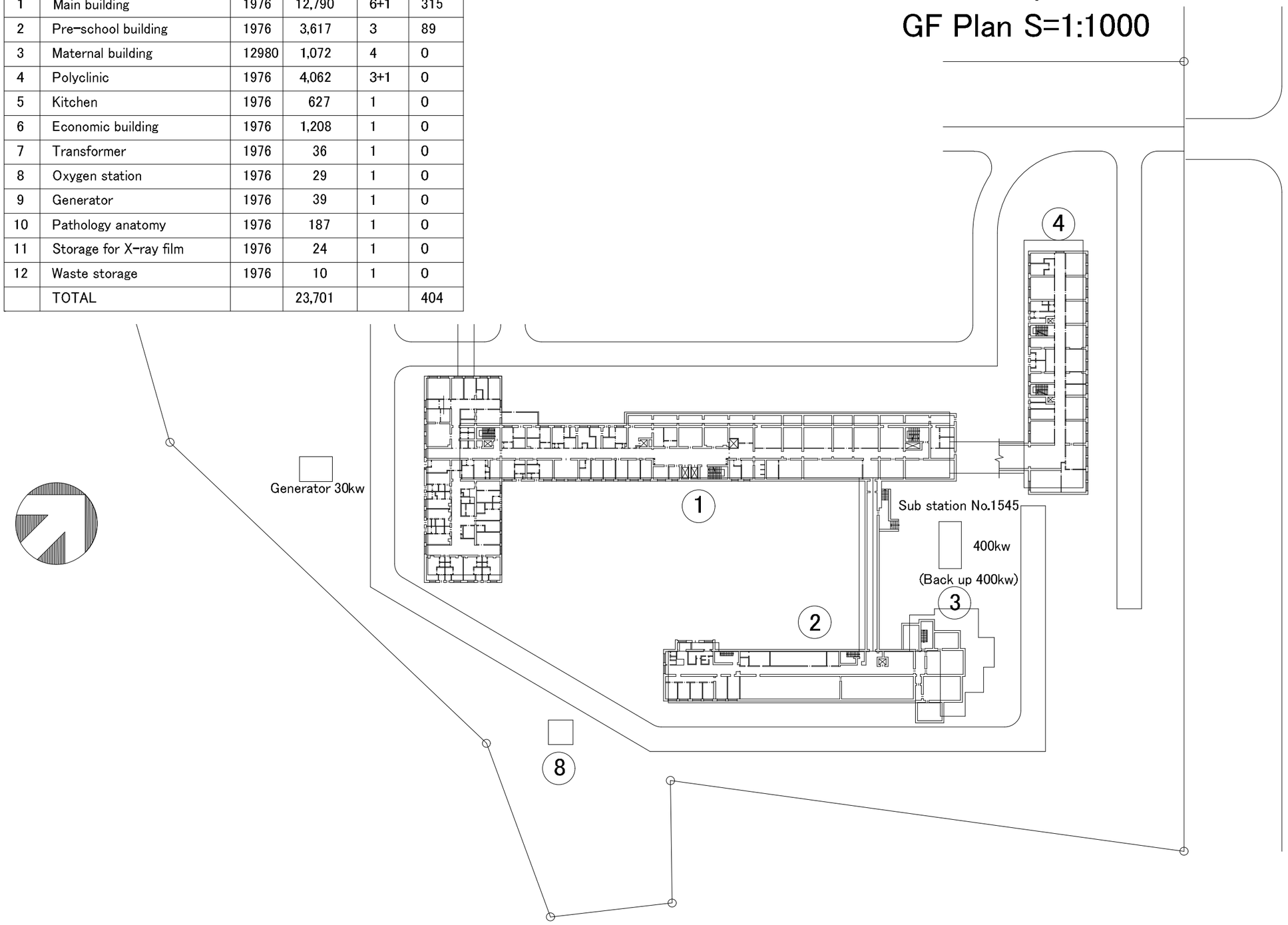
Requested								*Process 1 : Targeted Department and Equipment*								*Process2 : Quantity and Specifications*							
No.	Equipment	Kharkiv Oblast Children Clinical Hospital No.1	Dnepropetrovsk Oblast Children Clinical Hospital	Kirovgrad Oblast Children Clinical Hospita;	Donetsk Oblast Children Clinical Hospital	Lugansk Oblast Children Clinical Hospital	Total	Equipment	Kharkiv Oblast Children Clinical Hospital No.1	Dnepropetrovsk Oblast Children Clinical Hospital	Kirovgrad Oblast Children Clinical Hospita;	Donetsk Oblast Children Clinical Hospital	Lugansk Oblast Children Clinical Hospital	Total	Decision	No.		Kharkiv Oblast Children Clinical Hospital No.1	Dnepropetrovsk Oblast Children Clinical Hospital	Kirovgrad Oblast Children Clinical Hospita;	Donetsk Oblast Children Clinical Hospital	Lugansk Oblast Children Clinical Hospital	Total
43	Refrigerator, pharmaceutical	0	0	10	10	3	**23**	Refrigerator, pharmaceutical	0	0	0	0	0	**0**	②								
44	Cystoscope, fiber, A	1	2	2	2	1	**8**	Cystoscope, fiber, A	0	1	0	1	**0**	**2**	①	36	Cystoscope, fiber, A	0	1	0	1	0	**2**
	Cystoscope, fiber, B							Cystoscope, fiber, B	0	1	1	1	1	**4**		37	Cystoscope, fiber, B	0	1	1	1	1	**4**
	Cystoscope, rigid							Cystoscope, rigid	1	0	1	0	0	**2**		38	Cystoscope, rigid	1	0	1	0	0	**2**
45	Anaesthesia Apparatus	9	7	4	4	8	**32**	Anaesthesia Apparatus	9	7	4	4	8	**32**		39	Anaesthesia Apparatus	6	6	3	4	4	**23**
46	Autoclave	3	3	2	0	2	**10**	Autoclave	3	3	2	0	2	**10**		40	Autoclave	2	2	2	0	2	**8**
47	Sterilizer	5	2	1	5	6	**19**	Sterilizer	5	2	1	5	6	**19**		41	Sterilizer	3	2	1	2	2	**10**
48	Bronchoscope, fiber, A	2	2	1	1	2	**8**	Bronchoscope, fiber, A	0	2	0	0	1	**3**		42	Bronchoscope, fiber, A	0	1	0	0	1	**2**
	Bronchoscope, fiber, B							Bronchoscope, fiber, B	0	0	1	0	0	**1**		43	Bronchoscope, fiber, B	0	0	1	0	0	**1**
	Bronchoscope, rigid							Bronchoscope, rigid	2	0	0	1	1	**4**		44	Bronchoscope, rigid	1	0	0	1	1	**3**
49	Gastro Fiberscope	1	2	1	3	0	**7**	Gastro Fiberscope	1	2	1	3	0	**7**		45	Gastro Fiberscope	1	1	1	1	0	**4**
50	Urethroscope	0	1	0	0	0	**1**	Urethroscope	0	0	0	0	0	**0**	④								
51	ENT Unit	0	0	0	1	1	**2**	ENT Unit	0	0	0	0	0	**0**	③								
52	Laringoscope Set	2	6	0	14	9	**31**	Laringoscope Set	0	0	0	0	0	**0**	②								
53	Operation Instrument Set	0	2	0	0	3	**5**	Operation Instrument Set	0	0	0	0	0	**0**	②								
54	Diagnostic Instrument Set	0	2	0	5	2	**9**	Diagnostic Instrument Set	0	0	0	0	0	**0**	②								
55	Diagnostic Set, Ophthalmic	0	1	2	0	2	**5**	Diagnostic Set, Ophthalmic	0	0	0	0	0	**0**	③								
56	Centrifuge, Table Top	4	15	0	6	5	**30**	Centrifuge, Table Top	4	15	0	6	5	**30**		46	Centrifuge, Table Top	4	4	4	4	4	**20**
57	Autoclave, Laboratory	4	0	0	4	2	**10**	Autoclave, Laboratory	4	0	0	4	2	**10**		47	Autoclave, Laboratory	3	0	0	3	2	**8**
58	Hematology Analyzer	0	2	1	0	1	**4**	Hematology Analizer	0	2	1	0	1	**4**		48	Hematology Analizer	0	1	1	0	1	**3**
59	Microscope	8	0	10	8	10	**36**	Microscope	8	0	10	8	**7**	**33**	①	49	Microscope	8	8	8	8	8	**40**
60	Water Bath	4	15	15	0	4	**38**	Water Bath	4	15	15	0	4	**38**		50	Water Bath	4	3	1	0	4	**12**
61	Distiller	1	0	4	5	10	**20**	Distiller	0	0	0	0	0	**0**	②								
62	Biochemical Analyzer	0	0	0	0	0	**0**	Biochemical Analyzer	0	0	0	0	0	**0**	⑤								
63	Spectrophotometer	1	5	2	0	2	**10**	Spectrophotometer	1	5	2	0	2	**10**		51	Spectrophotometer	1	3	2	0	2	**8**
64	Incubator	2	0	2	2	7	**13**	Incubator	2	0	2	**0**	**4**	**8**	①	52	Incubator	2	0	2	0	3	**7**
65	PH Meter	2	3	1	1	4	**11**	PH Meter	2	3	1	1	4	**11**		53	PH Meter	2	3	1	1	3	**10**
66	Centrifuge, Hematocrit	0	1	1	0	0	**2**	Centrifuge, Hematocrit	0	1	1	0	0	**2**		54	Centrifuge, Hematocrit	0	1	1	0	0	**2**
67	Hemoglobinmeter	0	0	1	0	0	**1**	Hemoglobinmeter	0	0	1	0	0	**1**	②								
	CT Scanner	1	0	0	0	1	**2**	CT Scanner	1	0	0	0	1	**2**		55	CT Scanner	1	0	0	0	1	**2**
	Generator, 50KW	0	0	1	0	0	**1**	Generator, 50KW	0	0	0	0	0	**0**	②								
	Generator, 30KW	0	0	1	0	0	**1**	Generator, 30KW	0	0	0	0	0	**0**	②								
	Generator, 20KW	0	0	0	0	3	**3**	Generator, 20KW	0	0	0	0	0	**0**	②								
	Generator, 5KW	0	0	0	0	2	**2**	Generator, 5KW	0	0	0	0	0	**0**	②								
	Colonoscope, Fiber	0	0	0	0	1	**1**	Colonoscope, Fiber	0	0	0	0	0	**0**	③								
	Electric Scale	0	0	0	0	19	**19**	Electric Scale	0	0	0	0	0	**0**	②								
	ENT Operation Instrument	0	0	0	1	0	**1**	ENT Operation Instrument	0	0	0	0	0	**0**	②								
	Examination Table	0	0	0	2	0	**2**	Examination Table	0	0	0	0	0	**0**	②								
	Film Processor	0	0	0	2	0	**2**	Film Processor	0	0	0	0	0	**0**	②								
	ICU Bed, Infant	0	0	0	2	13	**15**	ICU Bed, Infant	0	0	0	0	0	**0**	②								
	Instrument Set, Pathology	0	0	0	1	0	**1**	Instrument Set, Pathology	0	0	0	0	0	**0**	②								
	Microtome	0	0	0	1	1	**2**	Microtome	0	0	0	0	0	**0**	②								
	Neonatal Operation Instrument	0	0	0	1	0	**1**	Neonatal Operation Instrument	0	0	0	0	0	**0**	②								
	Operation Glass with Reflector	0	0	0	1	0	**1**	Operation Glass with Reflector	0	0	0	0	0	**0**	③								
	Ophthalmology Operation Instrument	0	0	0	1	0	**1**	Ophthalmology Operation Instrument	0	0	0	0	0	**0**	③								
	Parafin Oven	0	0	0	1	0	**1**	Parafin Oven	0	0	0	0	0	**0**	③								
	Refrigerator, Morgue	0	0	0	1	1	**2**	Refrigerator, Morgue	0	0	0	0	0	**0**	③								
	Stretcher, simple	0	0	0	1	0	**1**	Stretcher, simple	0	0	0	0	0	**0**	②								
	Urodynamic	0	0	0	1	0	**1**	Urodynamic	0	0	0	0	0	**0**	③								
	Ventilator, Manual	0	0	0	2	0	**2**	Ventilator, Manual	0	0	0	0	0	**0**	②								
	X-Ray Protection Set	0	0	0	2	0	**2**	X-Ray Protection Set	0	0	0	0	0	**0**	②								

Figures 2-1 Drawing of Kharkiv Oblast Children Clinical Hospital No.1

No.	Building Name	Year	Area(çu)	Floor	Beds
1	Main building	1976	12,790	6+1	315
2	Pre-school building	1976	3,617	3	89
3	Maternal building	12980	1,072	4	0
4	Polyclinic	1976	4,062	3+1	0
5	Kitchen	1976	627	1	0
6	Economic building	1976	1,208	1	0
7	Transformer	1976	36	1	0
8	Oxygen station	1976	29	1	0
9	Generator	1976	39	1	0
10	Pathology anatomy	1976	187	1	0
11	Storage for X-ray film	1976	24	1	0
12	Waste storage	1976	10	1	0
	TOTAL		23,701		404

Kharkiv Oblast Children Clinical Hospital No.1

GF Plan S=1:1000



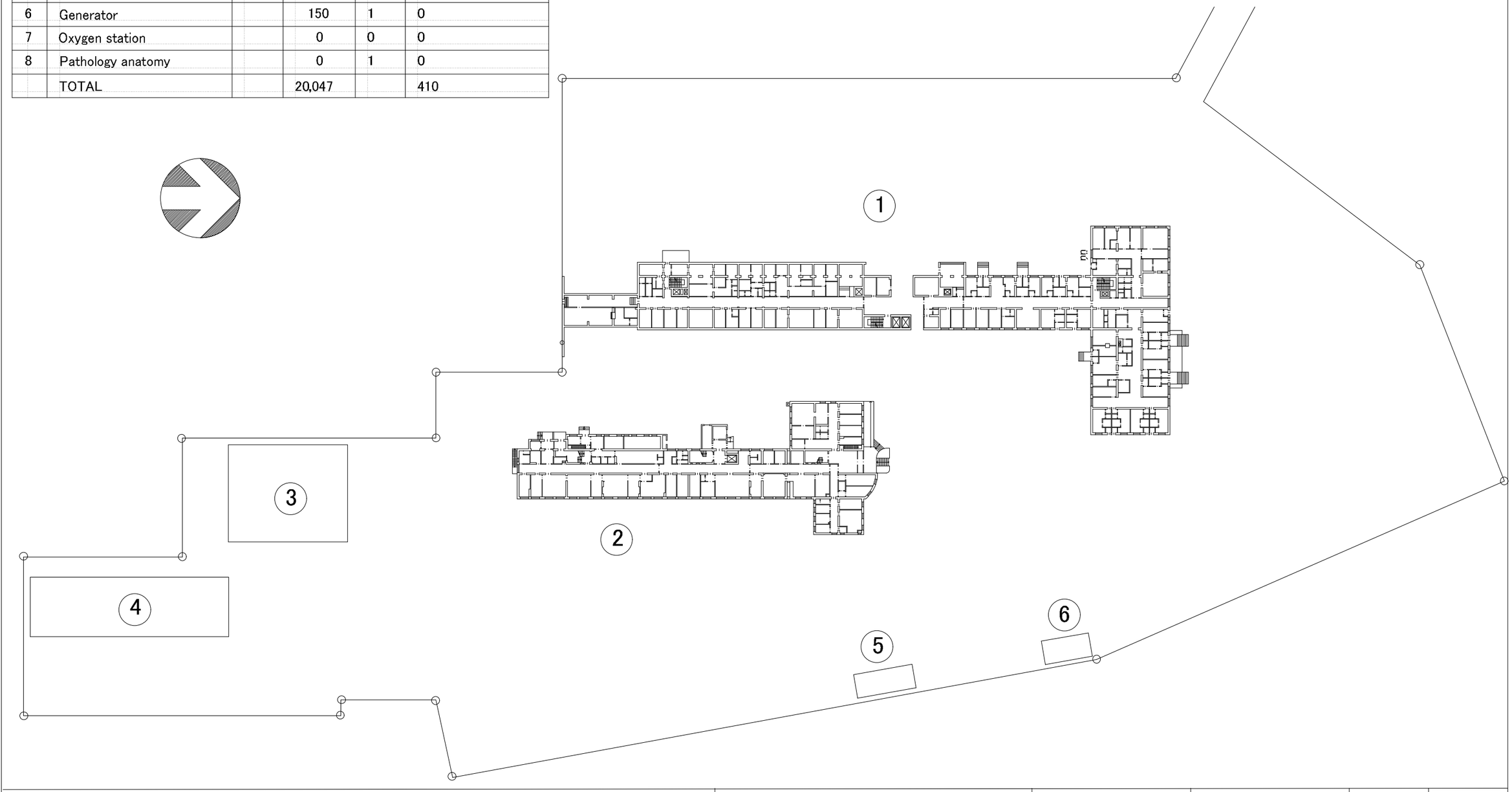
PROJECT NAME	HOSPITAL NAME Kharikiv	BUILDING NUMBER	FLOOR LEVEL	SCALE	SHEET No.
	ROOM NAME			1/1000	

Figures 2-2 Drawing of Dnepropetrovsk Oblast Children Clinical Hospital

No.	Building Name	Year	Area(çu)	Floor	Beds
1	Main building	1981	11,480	6+1	310
2	Pre-school building	1981	6,604	4+1	100
3	Kitchen	1985	1,321	1+1	0
4	Garage	1985	641	1	0
5	Transformer		100	1	0
6	Generator		150	1	0
7	Oxygen station		0	0	0
8	Pathology anatomy		0	1	0
	TOTAL		20,047		410

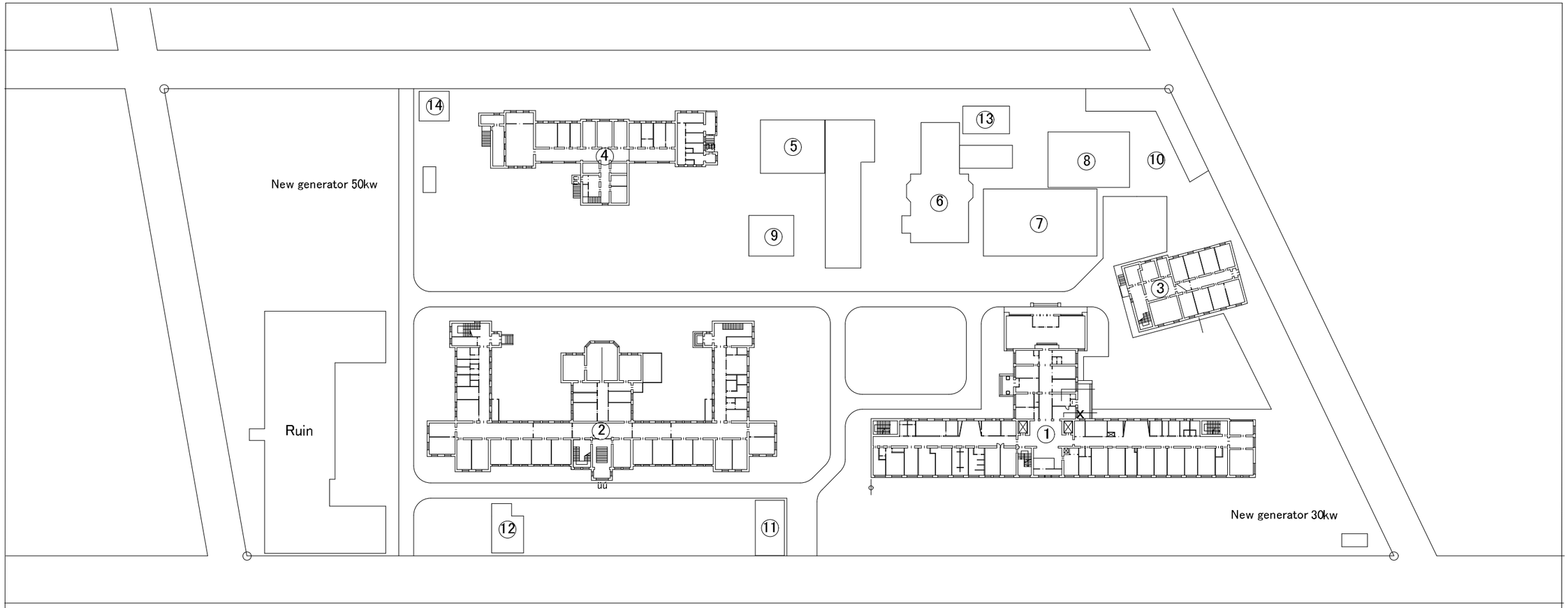
Dnepropetrovsk Oblast Children Clinical Hospital

1F Plan S=1:1000



PROJECT NAME	HOSPITAL NAME Dnepropetrovsk	BUILDING NUMBER	FLOOR LEVEL	SCALE 1/1000	SHEET No.
	ROOM NAME				

Figures 2-3 Drawing of Kirovgrad Oblast Children Clinical Hospital



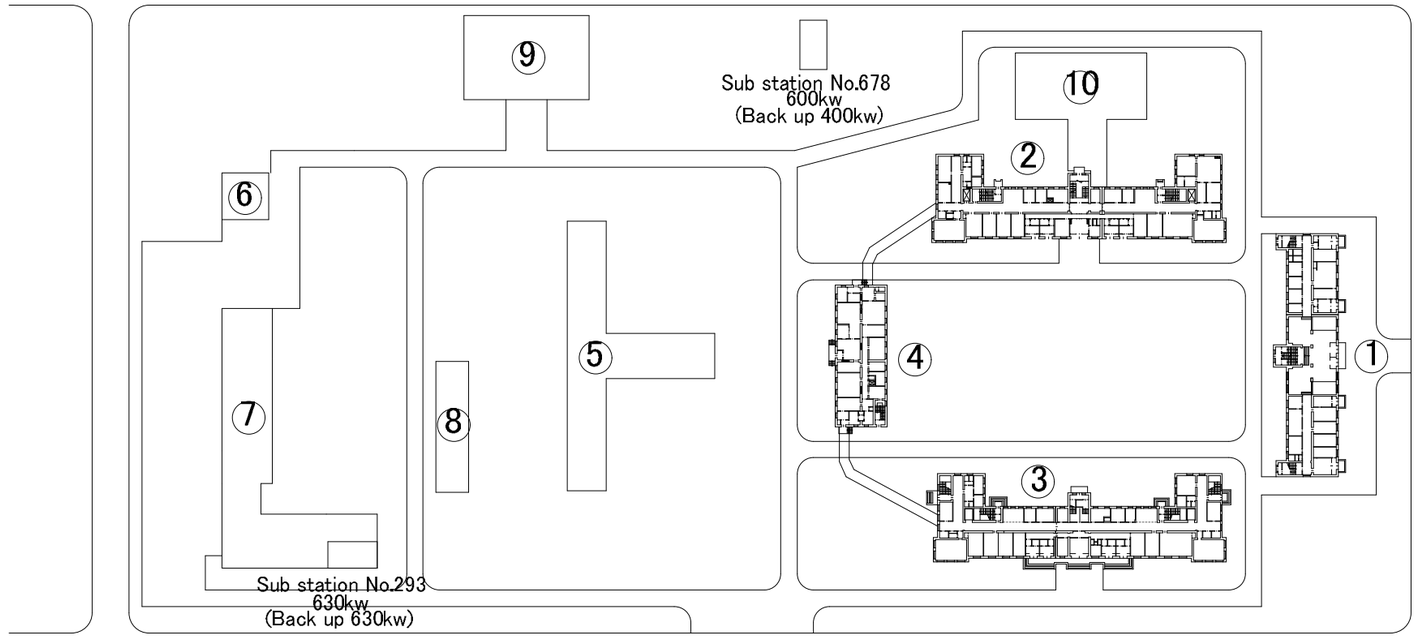
No.	Building Name	Year	Area(㎡)	Floor	Beds
1	Main Treatment building	1965	3,786	4+1	218
2	Surgery building	1903	3,010	2+1	168
3	Neurology building	1980	618	2+1	40
4	Diagnostic building	1903	999	2+1	80
5	Kitchen	1968	414	1+1	
6	Laundry	1920	110	2	
7	ADMI	1968	861	3+1	
8	Pathology anatomy	1950	247	1	
9	Food storage	1950	100	1	
10	Storage	1950	100	1	
11	Gaurd house	1950	100	1	
12	X-ray house	1950	100	1	
13	Boiler	1950	0	2	
14	Transformer	1950	0	1	
	TOTAL		10,445		506

Kirovograd Oblast Children Clinical Hospital

Block Plan S=1:2000

PROJECT NAME	HOSPITAL NAME Kirovgrad	BUILDING NUMBER	FLOOR LEVEL	SCALE	SHEET No.
	ROOM NAME			1/2000	

Figures 2-4 Drawing of Donetsk Oblast Children Clinical Hospital

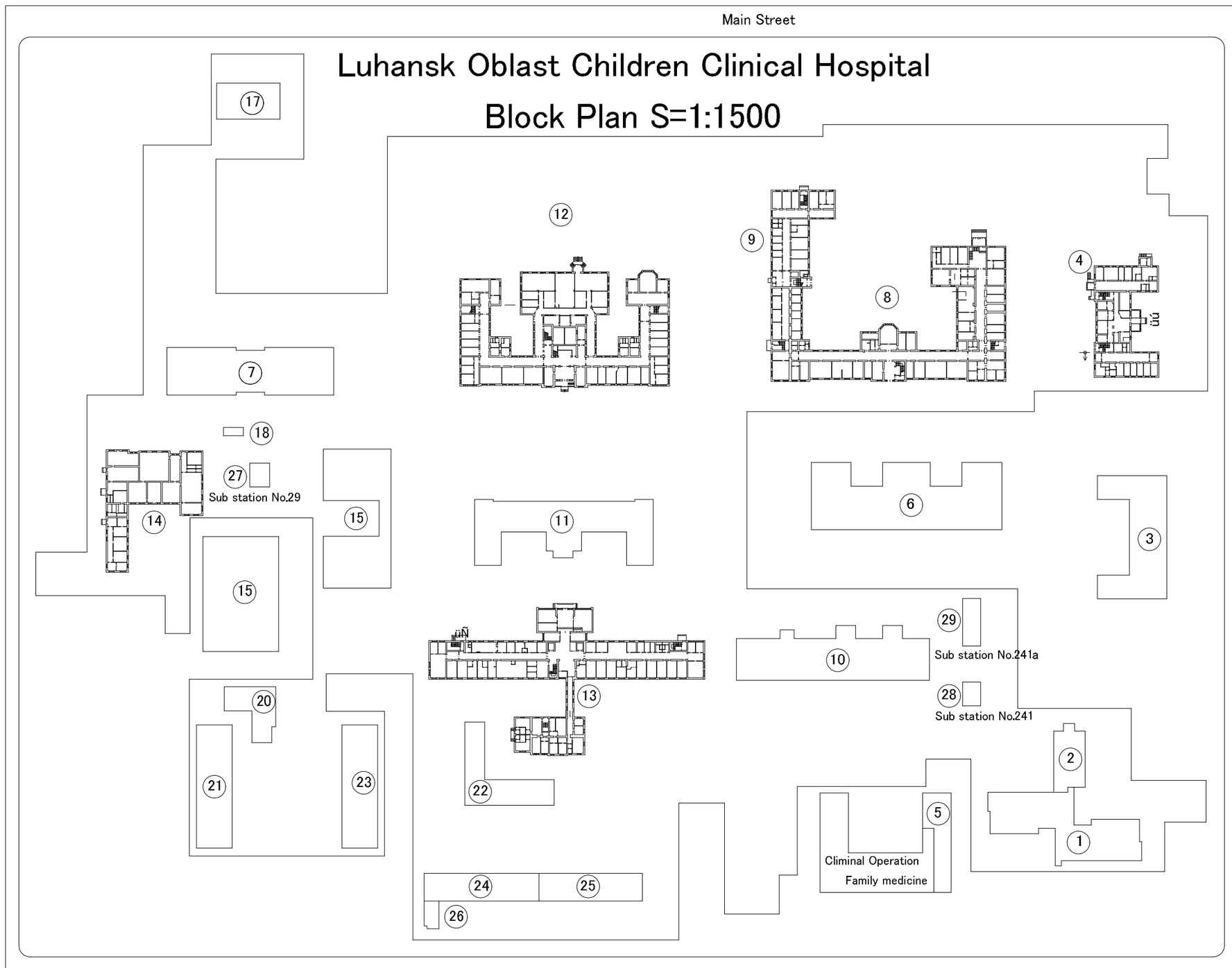


No.	Building Name	Year	Area(çu)	Floor	Beds
1	Polyclinic	1965	2,598	4	0
2	Surgical Ward	1965	2,361	4	200
3	Medical Ward	1965	3,836	4	170
4	Kitchen	1965	930	2	0
5	Isolation Ward	1965	823	1	30
6	Pathology Anatomy	1965	97	1	0
7	Laundry	1963	435	1	0
8	Garage	1963	386	1	0
9	ADMI+Hostel	1973	2,903	5	0
10	Operation Block	1991	3,187	4	40
	TOTAL		17,556		440

Donetsk Children Hospital
Block Plan S=1:2000

PROJECT NAME	HOSPITAL NAME Donetsk	BUILDING NUMBER	FLOOR LEVEL 1F	SCALE 1/2000	SHEET NO.
	ROOM NAME				

Figures 2-5 Drawing of Lugansk Oblast Children Clinical Hospital



No.	Building Name	Year	Area(çu)	Floor	Beds
1	Dormitory	1976	6,847	9	0
2	Conference	1976	0	1	0
3	Blood center	1972	0	2	0
4	Polyclinic	1972	1,661	3	0
5	Morgue	1972	500	2	0
6	Adult Cardiology	1928	0	2	0
7	Infectious Diagnostic	1928	776	1	30
8	ADMI. ICU	1928	3,574	2	52
9	NICU	1970	1,563	3	45
10	Child Cardiology	1928	873	1	40
11	Pulmatology	1928	784	1	40
12	Trauma, Uro, Ophtal	1928	3,330	2	130
13	4 story building	1970	5,798	4	165
14	CSSD, Functional dia.	1928	705	1	0
15	Kitchen, Food storage	1928	1,234	1	0
16	Boiler (City)	1970	0	1	0
17	Pharmacy	1928	530	2	0
18	Mini-boiler		20	1	0
19	Air-raid shelter		0	1	0
20	Garage		500	1	0
21	Garage		500	1	0
22	Garage		500	1	0
23	Garage		500	1	0
24	Storage		500	1	0
25	Work shop for plumbing		500	1	0
26	Pharmacy		0	1	0
27	Sub station No.29		100	1	0
28	Sub station No.241		100	1	0
29	Sub station No.241a		100	1	0
	TOTAL		31,495		502

PROJECT NAME	HOSPITAL NAME Luhansk	BUILDING NUMBER	FLOOR LEVEL	SCALE	SHEET No.
	ROOM NAME			1/1500	

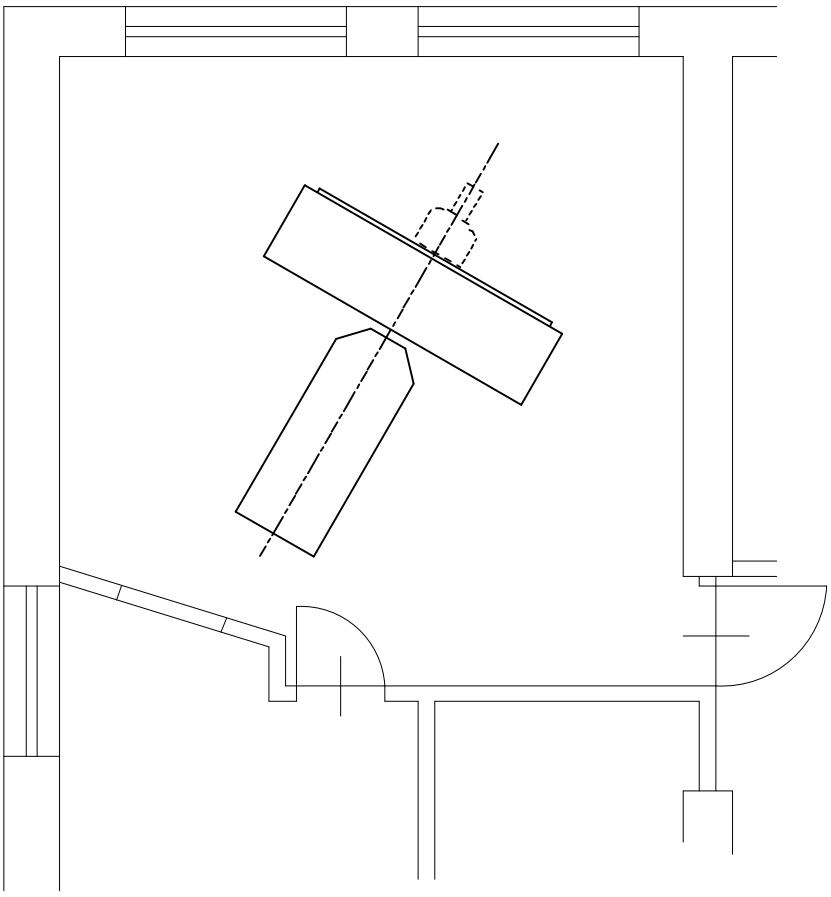


Figure 2-6 Kharkiv Oblast Children Clinical Hospital No.1/CT Room

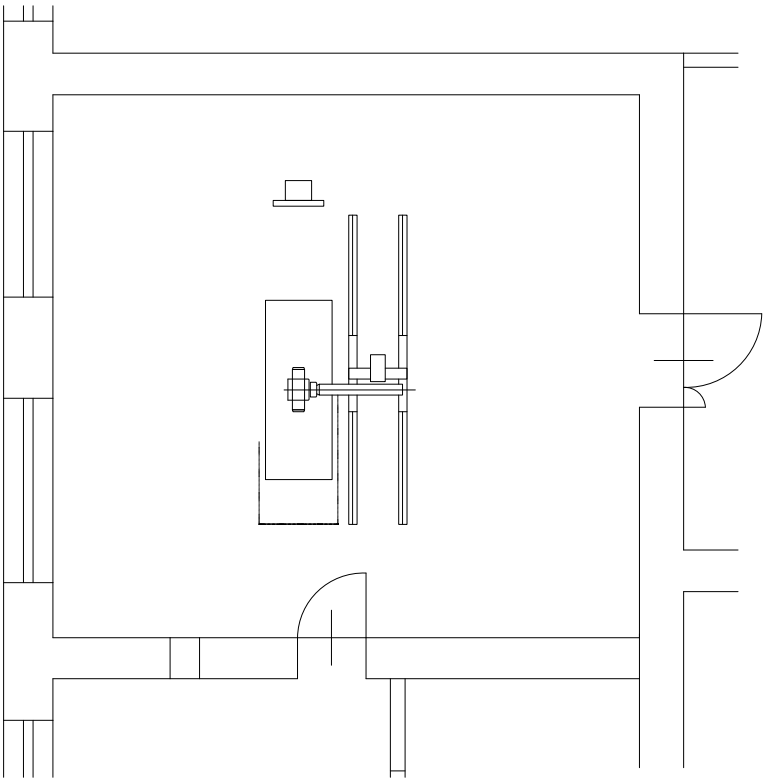


Figure 2-7 Dnepropetrovsk Oblast Children Clinical Hospital/1F X-Ray Room

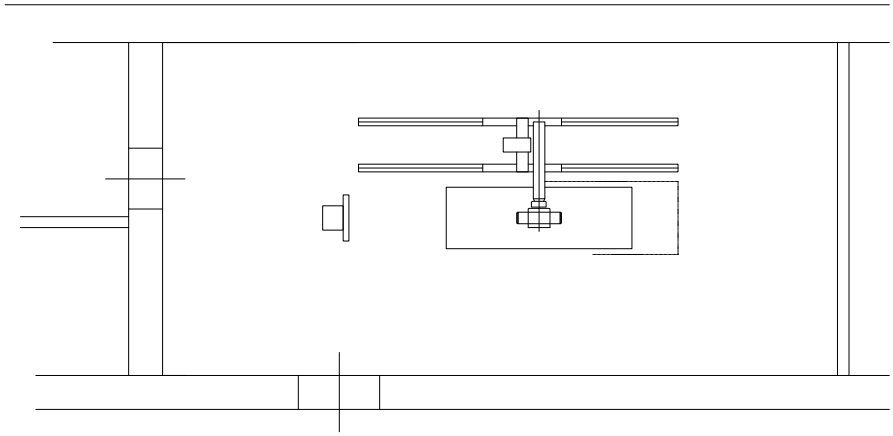


Figure 2-8 Dnepropetrovsk Oblast Children Clinical Hospital/2F X-Ray Room

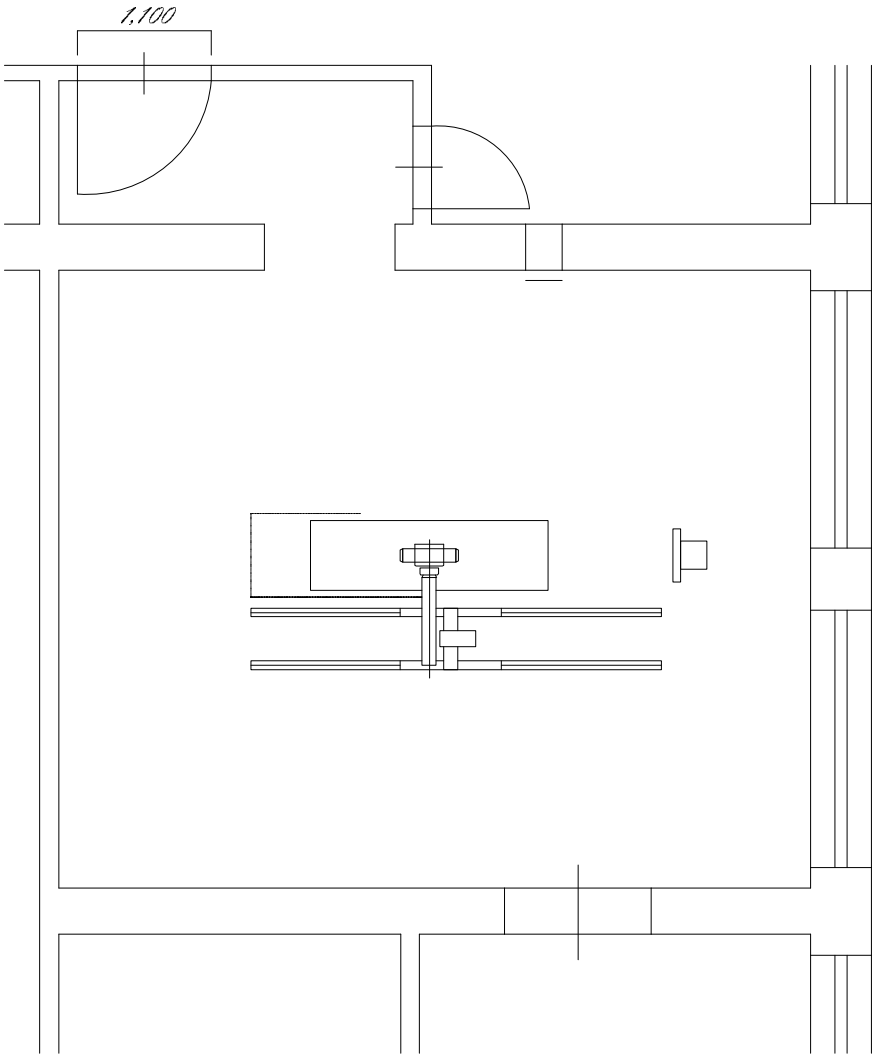


Figure 2-9 Kirovograd Oblast Children Clinical Hospital/1F X-Ray Room

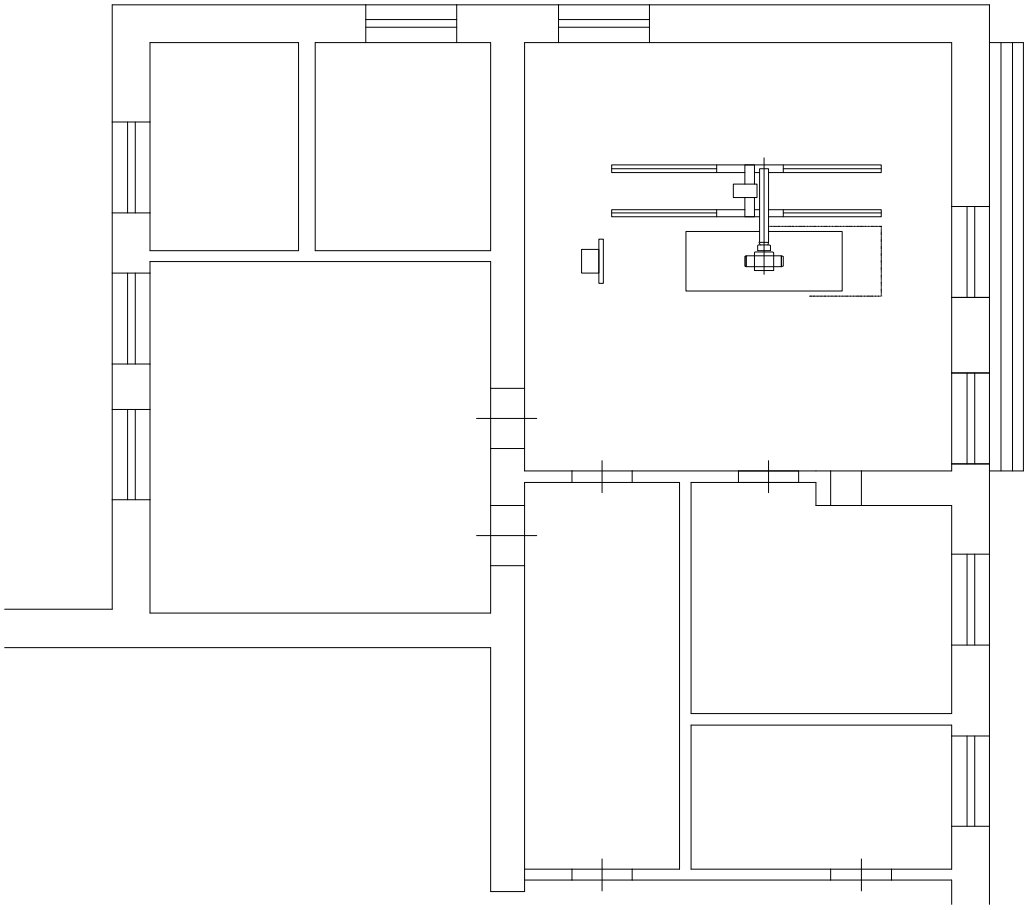


Figure 2-10 Donetsk Oblast Children Clinical Hospital/2F X-Ray Room

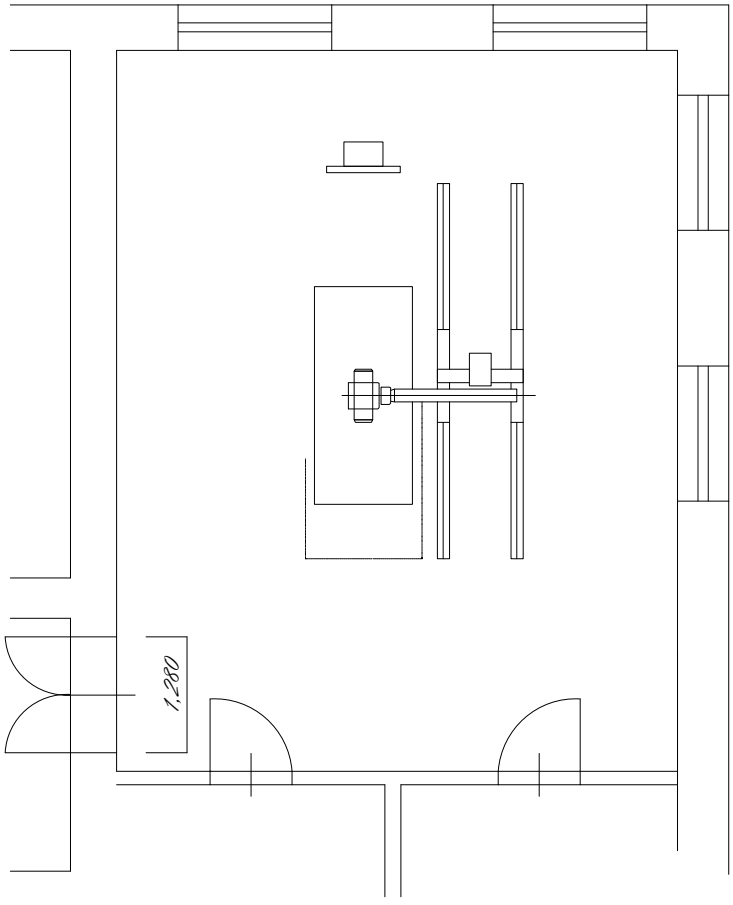


Figure 2-11 Lugansk Oblast Children Clinical Hospital/1F X-Ray Room

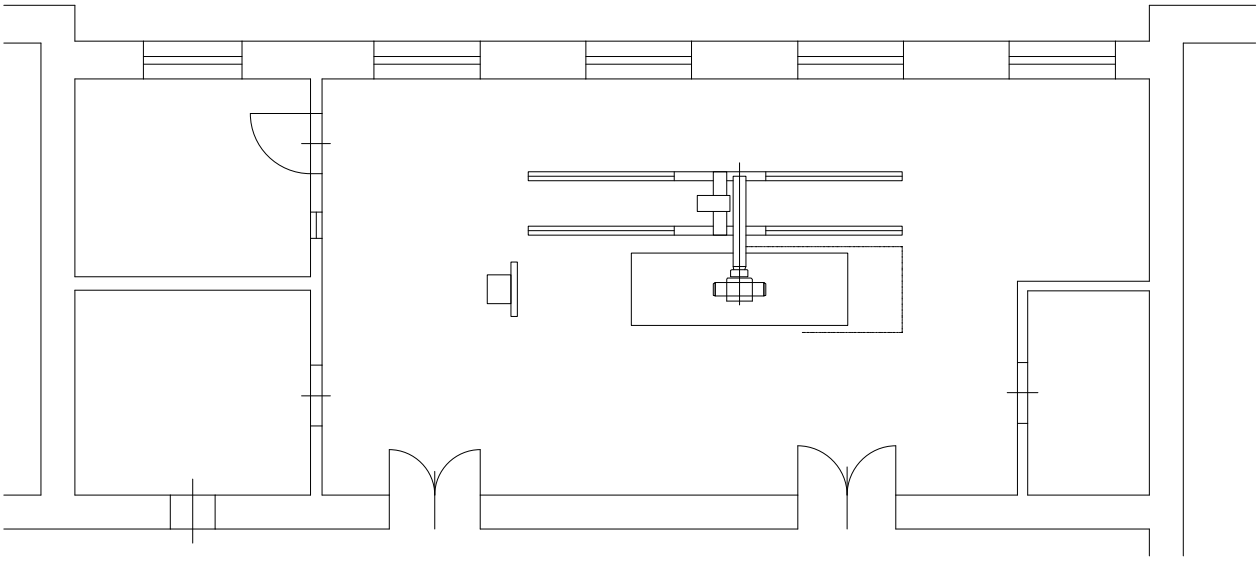


Figure 2-12　Lugansk Oblast Children Clinical Hospital/1F X-Ray Room

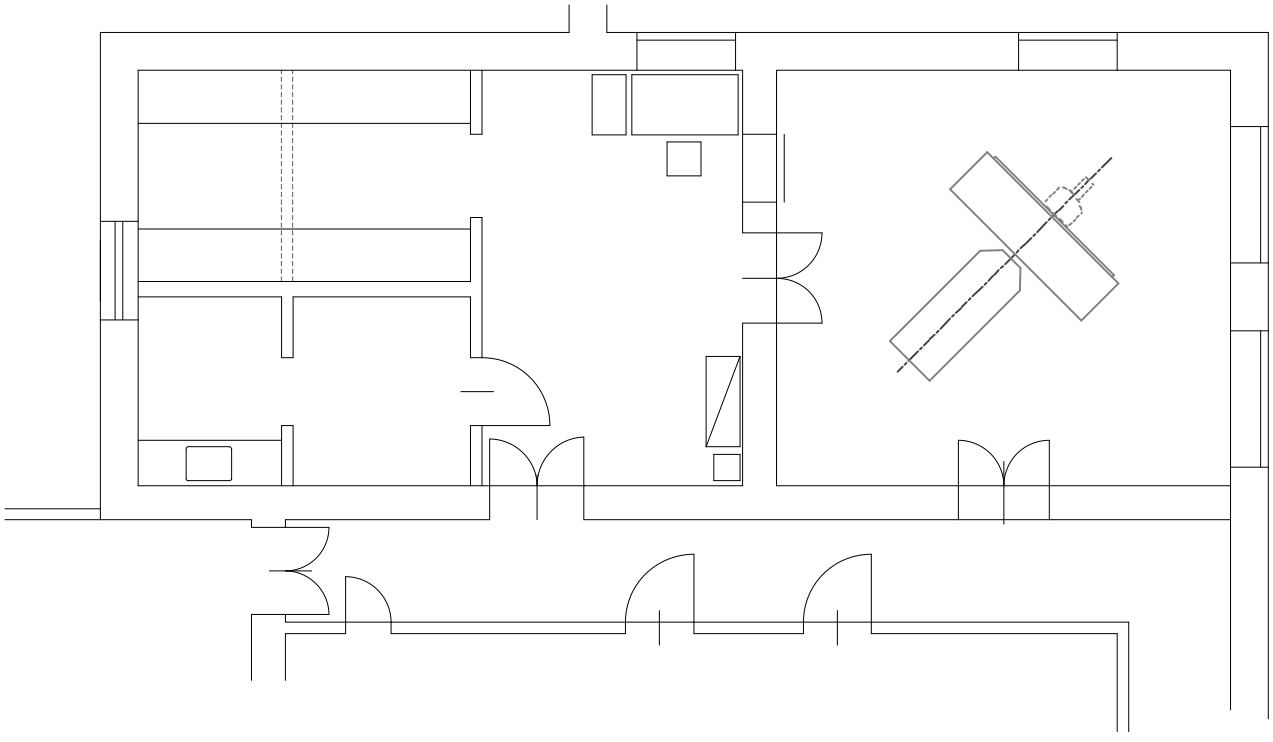


Figure 2-13　Lugansk Oblast Children Clinical Hospital/2F X-Ray Room

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

This project will require approval by a cabinet meeting of the Japanese government in accordance with the framework of Japanese grant aid, and will be implemented after the Exchange of Notes (E/N) concerning the project between the Japanese and the Ukrainian governments. After the conclusion of the E/N between the two governments, a Japanese consultant company recommended by JICA will conclude a consultant agreement with the Ministry of Health of Ukraine in accordance with the procedures of Japanese grant aid. The agreement will come to effect upon verification of Japanese government. The consultant will implement duties related to tender and supervision of procurement on the basis of the agreement.

The procurement of equipment is implemented by a Japanese corporate company selected by tender; it will conclude the agreement with the Ministry of Health of Ukraine, and the agreement will also come into effect upon verification of Japanese government.

The Japanese company will be responsible for the procurement, carriage and installation of the necessary equipment; the provision of technical training concerning the 8 fields, 1)the dental equipment, 2)the endoscope, 3)the operating light, 4)the laboratory analyzer, 5) the autoclave, 6) the medical electronic equipment, 7) the image diagnosis equipment and 8)other medical equipment with instructed by the local health office of each oblast and director of each hospital, and also provide the drawing up of manuals and other technical documents required for the maintenance of the equipment after the procurement, together with a list of manufactures and their agents.

2-2-4-2 Implementation Conditions

The medical equipment to be used in Ukraine should be registered in the Ministry of Health in Ukraine. The equipment to be imported for the purpose of humanitarian aid such as the grant aid cooperation can be procured without tax on the request from the Ministry of Health to the customs in Ukraine. The equipment procured from the manufacture in Ukraine is taken a step of tax-exemption in conjunction with the embassy of Japan under the guidance of the Japanese consultant. After the exchange of notes, the embassy of Japan will register the project in the Ministry of Economy. After that, the procurement company will submit the photo copy of the invoice provided by the manufacture in Ukraine to the embassy of Japan. Then the embassy of Japan will submit the application for tax-exemption to the Ministry of Economy and receive a

note of confirmation of tax-exemption.

2-2-4-3 Scope of Works

(1)Japanese government

i. Procurement of the planned equipment

ii. Marine transportation and land transportation to the center

iii. Installation and placement of the equipment

iv. A trial run of the procured equipment, and technical training on operation, routine inspection and maintenance

(2)Ukrainian government

i. Providing information and data necessary for the transport, installation and placement of the equipment

ii. Acquisition of approvals necessary to import the equipment (duty waiver, import license, and importing of medical equipment)

iii. Improvement of the sites where the procured equipment is planned to be installed.

iv. Securing the locations for unloading of the procured equipment

v. Providing sites for the storage of the equipment prior to its installation and replacement

vi. Securing the transportation route for the procured equipment.

vii. Removal of existing equipment and repairs to the rooms following the equipment removal

2-2-4-4 Consultant supervision

Following the implementation of duties related to the tender to select contractors to procure equipment, the consultant will ensure the smooth progress of the procurement and other duties. The key components of procurement supervision include the verification of a consistency between the equipment procured and its description in the agreement, inspection of the products and packing conditions prior to shipping, confirmation of the marine and land transportation/customs clearance status, and the final inspection and receiving of the goods in Ukraine. Regarding pre-shipping inspections, the consultant ensures that there is no discrepancy between the shipment contents and their descriptions in the agreement whereas a third party organization also inspects the entire shipment and packing contents. The consultant continually strives to stay informed of the progress of each process, provides the Ukrainian implementing organization and the equipment procurement company with appropriate advice and guidance,

and furnishes a report of the progress to the relevant organizations in both countries. The consultant performs spot checks.

2-2-4-5 Procurement Plan

(1) Procurement Sources

The planned equipment in this project should be procured from a Japanese or Ukrainian manufacture which has registered products in the Ministry of Health in line with the Medical Equipment Registration System of the Ministry of Health of Ukraine. But the Japanese equipment which requests an agent for maintenance service in Ukraine shall meet the condition. If the equipment under the condition cannot meet the condition, it should be procured from the manufacture of third countries which has registered in line with the Medical Equipment Registration System.

(2) Transportation Route

Equipment to be shipped from Japan will be packed in containers and shipped from the port of Yokohama for Odessa, Ukraine by boat. From Odessa, the equipment will be transported by truck to Kiev. After all shipments clear the customs, they will be transported by truck to each hospital. The total time requirement is approximately 45 days.

Products to be procured from third countries will be gathered at the port of Hamburg, Germany, and transported by truck to Kiev through Poland. After all shipments clear the customs, they will be transported by truck to each hospital. The total time requirement is approximately 14 days.

2-2-4-6 Operational Guidance Plan

At the installation of the equipment for the both Phase I and Phase II, the total 15 of engineers/ technicians from agents of 8 areas will dispatch such as 1) for the dental equipment, 2) for the endoscope, 3) for the operation lamp, 4) for the laboratory analyzer, 5) for the autoclave, 6) for the medical electronic equipment, 7) for the image diagnosis equipment, 8) for other medical equipment.

Initial training for operation after installation of the equipment will be implemented by one engineer/ technician of each area for one or two days at the time of completion of installation and adjustment of the equipment.

Almost of the planned equipment for this project are the same as the existing equipment and

have the same purpose of the use, so that preparation, cleaning and periodical inspection besides operation will be mainly instructed.

2-2-4-7Implementation Schedule

(1) Japanese government

Japanese side will implement procurement of the planned equipment, marine transportation and land transportation to the project sites, installation and placement of the equipment, a trial run of the procured equipment, and technical training on operation, routine inspection and maintenance. After handing over the equipment, the Japanese procurement company will be a responsible for flaws in the procured equipment for one year.

(2)Ukrainian government

Ukrainian side will provide information and data necessary for the transport, installation and placement of the equipment, improve the sites where the procured equipment is planned to be installed, acquire approvals regarding customs including importing and tax exemption, take budgetary steps for maintenance of the equipment after the procurement.

During the basic design study, the survey team confirmed that the Ministry of Economy, the Ministry of Health, and objective local governments will implement necessary budgetary steps for management and maintenance of the equipment as well as procedures of customs clearance including tax exemption without delay. So that there is no particular problem for implementation of the project..

	1	2	3	4	5	6	7	8
Detailed Design	■ (Confirmation of Specifications and Documents)							

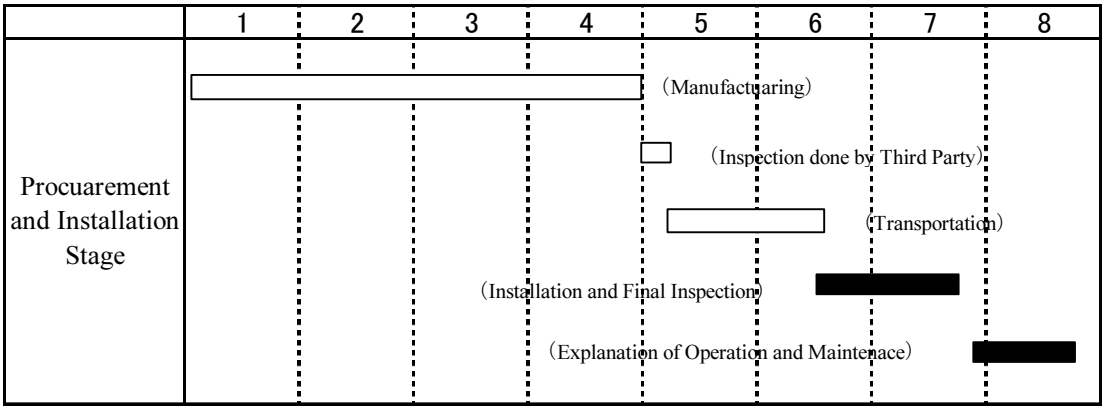


Figure2-14 The diagram of Implementation Schedule (1st Phase)

Figure 2-15 The diagram of Implementation Schedule (2nd Phase)

2-3 Obligations of Recipient Country

The responsibilities of the Ukrainian side in the implementation of this project are as shown in 2-2-4-7 Implementation Segmentation/Procurement and Installation Segmentation.

(1) Various arrangements that are necessary for the smooth customs clearance and domestic transportation of the procured equipment within Ukraine.

-Acquisition of approval for waiver of customs clearance fees and levies.

-Acquisition of approval for waiver of value added tax

-Acquisition of an import license.

-Acquisition of approval by the Ministry of Health of Ukraine for importing medical equipment.

(2) Waiver of customs and other various taxes for the equipment procurement company and its employees.

(3) Assurance of convenience and safety to Japanese citizens involved with this project.

(4) Arrangement of the Banking Arrangements (B/A) and both payment of Authorization

(5) Offer of personnel and a budget (including a maintenance budget) necessary for the efficient implementation of this project.

(6) Acquisition of any other approval that is needed for implementation of this project.

(7) Disclosure of any other information and data that are needed.

Prior to the installation of the equipment procured in this project, the survey team confirmed that the Ministry of Economy, the Ministry of Health, and objective local governments committed to taking necessary budgetary action with respect to improvement of installation places for CT scanners at Lugansk Oblast Children Clinical Hospital and Kharkiv Oblast Children Clinical Hospital No.1, and for image diagnosis equipment at 5 objective hospitals without delay in writing, and so was they did for maintenance. Hence, there is no particular problem for the implementation of this project.

2-4 Poject Operation Plan

Since the five objective facilities are placed as the top referral children hospital each oblast, there are from 100 to 200 pediatricians and over 200 nurses on average working each facility. And furthermore, four facilities excluding Kirovgard Oblast Children Clinical Hospital are educational hospitals for national medical schools at oblast and hold the highest technology for services such as diagnosis/treatment done by professors and assistant professors of pediatrics every day. In addition to that, each facility always strives to improve technical level for medical personnel and let them attend the post-graduate training courses at the capital city, Kiev and Kharkiv, in case of introducing new equipment or diagnosis technology.

Regarding the maintenance of medical equipment at each of the hospitals, the majority of the hospitals use maintenance services that are provided by local branch offices of MedTechnica, which has provided maintenance as the public medical equipment corporation since before the country became independent. (MedTechnica is now a private corporation.) The only exception

is Lugansk Oblast Children Clinical Hospital, which has its own medical equipment maintenance crew. As for the maintenance of products that are manufactured in EU and US, the hospitals turn to the domestic agencies of their manufacturers.

2-5 Project Operation Plan

2-5-1 Initial Cost Estimation

The total cost of implementing the project is estimated at roughly ¥927 million. Based on the assumptions described in (3), the breakdown of the costs to be borne by Japan and Ukraine is estimated as follows. The estimated cost dose not automatically indicate the maximum amount of the aid that is specified in the E/N.

(1) Expenses borne by Japan (roughly ¥923 million)

1st Phase

Contents			Estimated Cost（Million Yen）	
Equipment	Kirovgrad Oblast Children Clinical Hospital	Operating Theater	39	181
		Intensive Care Unit	95	
		Laboratory Department	27	
		Imaging Diagnosis	6	
		Other Department	14	
	Lugansk Oblast Children Clinical Hospital	Operating Theater	55	244
		Intensive Care Unit	75	
		Laboratory Department	8	
		Imaging Diagnosis	93	
		Other Department	13	
Consulting Fee				26

2nd Phase

Contents			Estimated Cost（Million Yen）	
Equipment	Kharkiv Oblast Children Clinical Hospital No.1	Operating Theater	54	188
		Intensive Care Unit	44	
		Laboratory Department	7	
		Imaging Diagnosis	55	
		Other Department	28	
	Dnepropetrovsk Oblast Children Clinical Hospital	Operating Theater	63	144
		Intensive Care Unit	16	
		Laboratory Department	6	
		Imaging Diagnosis	33	
		Other Department	26	
	Donetsk Oblast Children Clinical Hospital	Operating Theater	39	112
		Intensive Care Unit	19	
		Laboratory Department	6	
		Imaging Diagnosis	33	
		Other Department	15	
Consulting Fee				28

(2) Expenses borne by Ukraine (roughly ¥443 thousand)

1st Phase

Contents	Q'TY	Expense (Unit：Hryvnia)
Renovation for CT Scanner Room (Lugansk Oblast Children Clinical Hospital)	1	25,000 （590,000Yen）
Renovation for X-Ray Room (Kirovgrad Oblast Children Clinical Hospital)	2	20,000 （470,000 Yen）
Renovation for X-Ray Room (Lugansk Oblast Children Clinical Hospital)	3	30,000 （700,000 Yen）
Others (Commission)		19,565 （450,000 Yen）
Total		94,565 （2,210,000 Yen）

2nd Phase

Contents	Q'TY	Expense (Unit : Hryvnia)
Renovation for CT Scanner Room (Kharkiv Oblast Children Clinical Hospital No.1)	1	25,000 (590,000 Yen)
Renovation for X-Ray Room (DnepropetrovskOblast Children Clinical Hospital)	2	20,000 (470,000 Yen)
Renovation for X-Ray Room (Donetsk Oblast Children Clinical Hospital)	3	30,000 (700,000 Yen)
Others (Commission)		20,000 (460,000 Yen)
Total		95,000 (2,220,000 Yen)

(1) Pricing Assumptions

i. Time of calculations: June, 2006
ii. Foreign exchange rate: US$=¥117.44, 1 Euro=¥142.99
iii. Project period: 1st Phase 8 Months, 2nd Phase 8 Months
iv. Method of placing orders: Either a single lump order or divided orders
v. Others: To be implemented in accordance with the scheme of Japanese grant aid.

2-5-2 Operation and Maintenance Cost

The necessary operation and maintenance cost with the project implementation is as follows.

(1) Kirovgrad Oblast Children Clinical Hospital (1st Phase)

As Table 2-42 and 2-43 show, the oblast government's contribution to the 2005 budget of Kirovgrad Oblast Children Clinical Hospital was 8,887,765 Hryvnia (approximately ¥170 million). Of this amount, the annual budget for maintenance, including maintenance fees paid to agencies, was 1,942,552 Hryvnia (approximately ¥40 million). The budget contribution of the Kirovgrad Oblast Government to the hospital in 2001 was 3,161,443 Hryvnia (approximately ¥63 million). This means that the budget contribution has increased 2.8 folds over the past four years, and 1.5 folds since 2004, which was the preceding fiscal year.

The supplies which will become necessary as the result of the project implementation will cost 526,773 Hryvnia (approximately ¥10.5 million) annually whereas replacement parts after the initial year of procurement will cost 48,727 Hryvnia (approximately ¥0.97 million) annually, as shown in the data packet. This means 29.6% of the 2005 maintenance budget will be

additionally required. This maintenance cost that will become necessary once the project is implemented is believed to be attainable considering that the project will replace some of the existing equipment with newer equipment, allowing the current maintenance budget to be applied toward the new maintenance cost requirement, and also in light of the above-mentioned rise in the oblast government contributions over the past four years.

During the basic design study, Kirovgrad Oblast Government committed to taking new budgetary action with respect to the maintenance cost that will be needed once the project is implemented.

(2) Lugansk Oblast Children Clinical Hospital (1st Phase)

As Table 2-42 and 2-43 show, the oblast government's contribution to the 2005 budget of Lugansk Oblast Children Clinical Hospital was 12,897,728 Hryvnia (approximately ¥260 million). Of this amount, the annual budget for maintenance, including maintenance fees paid to agencies, was 3,737,694 Hryvnia (approximately ¥ 74 million). The budget contribution of Lugansk Oblast Government in 2001 was 5,917,161 Hryvnia (approximately ¥120 million). This means that the budget contribution has increased 2.2 folds over the past four years and 1.3 folds since 2004, the preceding fiscal year.

The supplies which will become necessary as the result of the project implementation will cost 673,928 Hryvnia (approximately ¥13.5 million) annually whereas replacement parts after the initial year of procurement will cost 113,672 Hryvnia (approximately ¥2.3 million) annually, as shown in the data packet. This means that approximately 21% of the 2005 maintenance budget will be additionally required. This maintenance cost that will become necessary once the project is implemented is believed to be attainable considering that the project will replace some of the existing equipment with newer equipment, allowing the current maintenance budget to be applied toward the new maintenance cost requirement, and also in light of the above-mentioned rise in the oblast government contributions over the past four years.

During the basic design study, Lugansk Oblast Government also promised to take new budgetary action with respect to the maintenance cost that will be needed once the project is implemented, as did Kirovgrad Oblast Government mentioned above.

Specially, the Lugansk Oblast Children Clinical Hospital at which the CT scanner will be installed is believed the current maintenance budget will be attainable on the grounds that it promised to save for necessary replacement parts.

Table 2-42 Annual Costs of Supplies and Replacement Parts by Hospital (1st Phase) (Unit：Hryvnia)

	Kirovgrad		Lugansk	
Annual Budget (oblast government budget only)	8,887,765	100.0%	12,897,728	100.0%
Maintenance Budget(Supplies and Replace Parts)	1,942,552	21.9%	3,737,694	28.9%

Table 2-43 Total Maintenance Cost Required for the Project by Hospital (1st Phase) (Unit：Hryvnia)

	Kirovgrad		Lugansk	
Supplies Required for the Project (Annual)	526,773	(27.1%)	673,928	18.0%
Replacement Parts Required for the Project(Annual)	48,727	(2.5%)	113,672	3.0%
Total Maintenance Cost Required for the Project	575,500	(29.6%)	787,600	21.0%

(3) Kharkiv Oblast Children Clinical Hospital No.1 (2nd Phase)

As Table 2-44 and 2-45 show, the oblast government's contribution to the 2005 budget of Kharkiv Oblast Children Clinical Hospital No. 1 was 9,801,044 Hryvnia (approximately ¥196 million). Of this amount, the annual budget for maintenance, including maintenance fees paid to agencies, was 617.838 Hryvnia (approximately ¥ 12 million). The budget contribution of Kharkiv Oblast Government in 2001 was 4,050,599 Hryvnia (approximately ¥80 million). This means that the budget contribution has increased 2.4 folds over the past four years and 1.5 folds since 2004, the preceding fiscal year.

The supplies which will become necessary as the result of the project implementation will cost 379,485 Hryvnia (approximately ¥7.6 million) annually whereas replacement parts after the initial year of procurement will cost 109,815 Hryvnia (approximately ¥2.2 million) annually, as shown in the data packet. This means that approximately 12% of the 2005 maintenance budget will be additionally required. This maintenance cost that will become necessary once the project is implemented is projected to be attainable considering that the project will replace some of the existing equipment with newer equipment, allowing the current maintenance budget to be applied toward the new maintenance cost requirement, and also in light of the above-mentioned rise in the oblast government contributions over the past four years.

As with the above-mentioned hospitals in the 1st Phase, a commitment has been secured during the basic design study regarding new budgetary action on the maintenance cost that will be needed once the project is implemented.

(4) Dnepropetrovsk Oblast Children Clinical Hospital (2nd Phase)

As Table 2-44 and 2-45 show, the oblast government's contribution to the 2005 budget of Dnepropetrovsk Oblast Children Clinical Hospital was 13,482,900 Hryvnia (approximately ¥269 million). Of this amount, the annual budget for maintenance, including maintenance fees

paid to agencies, was 3,968,091 Hryvnia (approximately ¥79 million). The budget contribution of Dnepropetrovsk Oblast Government in 2001 was 6,199,400 Hryvnia (approximately ¥120 million). This means that the budget contribution has increased 2.2 folds over the past four years and 1.1 folds since 2004, the preceding fiscal year.

The supplies which will become necessary as the result of the project implementation will cost 369,110 Hryvnia (approximately ¥7.3 million) annually whereas replacement parts after the initial year of procurement will cost 44,590 Hryvnia (approximately ¥0.89 million) annually, as shown in the data packet. This means that approximately 10% of the 2005 maintenance budget will be additionally required. This maintenance cost that will become necessary once the project is implemented is projected to be attainable considering that the project will replace some of the existing equipment with newer equipment, allowing the current maintenance budget to be applied toward the new maintenance cost requirement, and also in light of the above-mentioned rise in the oblast government contributions over the past four years.

As with the above-mentioned hospitals in the 1st Phase, a commitment has been secured during the basic design study regarding new budgetary action on the maintenance cost that will be needed once the project is implemented.

(5) Donetsk Oblast Children Clinical Hospital (2nd Phase)

As Table 2-44 and 2-45 show, the oblast government's contribution to the 2005 budget of Donetsk Oblast Children Clinical Hospital was 10,869,681 Hryvnia (approximately ¥217 million). Of this amount, the annual budget for maintenance, including maintenance fees paid to agencies, was 3,896,186 Hryvnia (approximately ¥77 million). The budget contribution of Donetsk Oblast Government in 2001 was 4,377,290 Hryvnia (approximately ¥87 million). This means that the budget contribution has increased 2.5 folds over the past four years and 1.4 folds since 2004, the preceding fiscal year.

The supplies which will become necessary as the result of the project implementation will cost 271,835 Hryvnia (approximately ¥5.4 million) annually whereas replacement parts after the initial year of procurement will cost 31,465 Hryvnia (approximately ¥0.63 million) annually, as shown in the data packet. This means that approximately 8% of the 2005 maintenance budget will be additionally required. This maintenance cost that will become necessary once the project is implemented is projected to be attainable considering that the project will replace some of the existing equipment with newer equipment, allowing the current maintenance budget to be applied toward the new maintenance cost requirement, and also in light of the

above-mentioned rise in the oblast government contributions over the past four years.

As with the above-mentioned hospitals in the 1st Phase, a commitment has been secured during the basic design study regarding new budgetary action on the maintenance cost that will be needed once the project is implemented.

Table 2-44 Annual Costs of Supplies and Replacement Parts by Hospital (2nd Phase) (Unit：Hryvnia)

	Kharkiv		Donepropetrovsk		Donetsk	
Annual Budget (oblast government budget only)	9,801,044	100.0%	13,482,900	100.0%	10,869,681	100.0%
Maintenance Budget(Supplies and Replace Parts)	1,453,718	14.8%	3,968,091	29.4%	3,896,186	35.8%

Table 2-45 Total Maintenance Cost Required for the Project by Hospital (2nd Phase) (Unit：Hryvnia)

	Kharkiv		Donepropetrovsk		Donetsk	
Supplies Required for the Project (Annual)	379,485	(26.1%)	369,110	(9.3%)	271,835	(6.9%)
Replacement Parts Required for the Project(Annual)	109,815	(7.6%)	44,590	(1.1%)	31,465	(0.8%)
Total Maintenance Cost Required for the Project	489,300	(33.7%)	413,700	(10.4%)	303,300	(7.7%)

2-6 Other Relevant Issues

There are important points on account of smooth implementation for this project as follows.

1)The Ministry of Economy promptly issue a note of confirmation of tax-exemption for the smooth customs clearance on the procurement of the equipment.

2)The Ukraine side arranges the Banking Arrangements (B/A) and the Authorization to Pay(A/P) and pays a commission for A/P.

3)The Ukraine side removes the existing equipment such as X-ray apparatus at each objective facility, and secures and allocates necessary budget for the renovation to install CT scanner.

4)The Ukraine side secures and allocates necessary budget for maintenance of the procured equipment of each facility mentioned in 3-5-2.

Chapter 3 Project Evaluation and Recommendations

Chapter 3 Project Evaluation and Recommendation

3-1 Project Effects

The effects of implmentation of the project and the extent of improvements are shown in Table 3-1.

Table 3-1 Effects of implementation of the project and improvements in the current situation.

Present situation and problems	Relevant measures to be taken in the project	Direct effects and extent of improvement	Indirect effects and extent of improvement
The five hospitals that provide pediatric medical care that are targeted by this project cover about 28% of the 9.9 million children in Ukraine as top referral hospitals in each respective oblast. Due to the economic crisis after Ukraine gained its independence, activities to improve its socioeconomic infrastructure have been seriously delayed. Since 2000, the country has also had difficulties in its funding of health and medical services despite its positive economic growth. In such a situation, Ukraine has failed to establish a medical infrastructure, especially in terms of procuring medical equipment, which has hindered the provision of pediatric health and medical care.	・Provide of equipment for Operating Theater ・Provide of equipment for Intensive Care Unit ・Provide of equipment for Intensive Care Unit ・Provide of equipment for Laboratory Department ・Provide of equipment for Imaging Diagnosis ・Provide of equipment for other equipment for related child health care	<u>Kharkiv Oblast Children Clinical Hospital No.1</u> ①Number of X-ray examination will be increased from 6,241 examinations. ②Number of ultrasound examinations will be increased from 46,738 examinations. ③Number of endoscope examinations will be increased from 1,304 examinations. ④Number of CT Scanner examinations will be increased. ⑤Number of the patients from the secondary hospitals will be increased over 14,827 patients. ⑥Number of the patients to Kiev will be decreased under 11 patients. <u>Dnepropetrovsk Oblast Children Clinical Hospital</u> ①Number of X-ray examination will be increased from 16,832 examinations. ②Number of ultrasound examinations will be increased from 76,177 examinations. ③Number of endoscope examinations will be increased from 2,699 examinations. ④Number of the patients from the secondary hospitals will be increased over 13,764 patients. ⑤Number of the patients to Kiev will be decreased under 5 patients. <u>Kirovgrad Oblast Children Clinical Hospital</u> ①Number of X-ray examination will be increased from 14,101 examinations. ②Number of ultrasound examinations will be increased from 15,541 examinations. ③Number of endoscope examinations will be increased from 58 examinations. ④Number of the patients from the secondary hospitals will be increased over 12,065 patients. ⑤Number of the patients to Kiev will be decreased under 320 patients.	(1) Improving the top referral hospitals in the five oblasts will help Ukraine reinforce its system of pediatric medical care referral. (2) Improving pediatric medical care will help Ukraine enjoy better indicators of pediatric medical care. (3) Improving the diagnostic and treatment capabilities of the target hospitals will help them increase their capacity to accept more patients, which will in turn reduce the psychological and economic burdens of patients associated with being transferred to another hospital.

Present situation and problems	Relevant measures to be taken in the project	Direct effects and extent of improvement	Indirect effects and extent of improvement
		Donetsk Oblast Children Clinical Hospital ①Number of X-ray examination will be increased from 8,109 examinations. ②Number of ultrasound examinations will be increased from 44,004 examinations. ③Number of endoscope examinations will be increased from 3,569 examinations. ④Number of the patients from the secondary hospitals will be increased over 8,600 patients. ⑤Number of the patients to Kiev will be decreased under 252 patients. Lugansk Oblast Children Clinical Hospital ①Number of X-ray examination will be increased from 10,867 examinations. ②Number of ultrasound examinations will be increased from 47,230 examinations. ③Number of endoscope examinations will be increased from 518 examinations. ④Number of CT Scanner examinations will be increased. ⑤Number of the patients from the secondary hospitals will be increased over 9,244 patients. ⑥Number of the patients to Kiev will be decreased under 176 patients.	

The effects of implementation for the Project is drawn up based on the number of examination and transmitting patients for each hospital in 2005 according to the answer for questionnaire. Direct effects and extent of improvement was confirmed with each hospital director.

3-2 Recommendations

1) Stable supply of financial resources for medical services

Ukraine has planned several times to introduce a compulsory health insurance system since gaining its independence in order to ensure sound health and medical funding. However, it has yet to succeed in realizing such a system.

Therefore, the budgets of the hospitals targeted by this project are still being drawn up based on the work quota method employed by the former Soviet Union, and based on the number of beds and employees at each hospital. The local government covers all expenditures for medical services, and patients are generally not charged for medical care.

Due to the economic growth since 2000, the budget of each hospital has significantly increased but remains inadequate to improve facilities and equipment. Thus in the years ahead, the country should build a more sound mechanism for funding medical services by introducing a compulsory health insurance system where patient co-payment is imposed, as well as a system of flat-rate payment by diagnostic related group which will be efficient in reducing the number of average hospitalized days and holding down extraneous medical costs.

2) Improvement in hospital management under a market economy system

The children's hospitals in Ukraine, including those covered by this project, have been reorganizing since the country gained its independence, including the separation from adult hospitals and a reduction in the number of beds. However, since these children's hospitals adopt the previously described work quota method, they still have too many beds and employees to secure their scale of management. Moreover, their clinical departments are so specialized that the efficiency is quite low.

In the future, these hospitals should make improvements, which include streamlining their departments, centralizing diagnostic departments, reusing human resources, reforming the financial management system, and reinforcing patient services. These steps will help the hospitals build a system to successfully compete with private hospitals that are expected to enter the market in the near future under a market economy system, and there is an urgent need to invigorate all pediatric medical care in Ukraine by taking these measures.

2. Coordination with Other Donors

This project could well be carried out in the existing system of the target hospitals under the control of each oblast government. By coordinating this project with support programs in the field of maternity health and medical care, including the maternity health and pediatric disease prevention programs for the poor that are now supported by the World Bank, WHO, and other international organizations, the pediatric medical care in rural areas of Ukraine will be more effectively strengthened and the health of Ukrainian children further improved.