

CHAPTER 2 Contents of the Project

2-1 Basic Concept of the Project

The Government of Kyrgyz Republic is proceeding with the reform of the medical health care system which is characterized by uneconomical and inefficient services as reflected by the number of hospital beds and staff being subdivided in accordance with Soviet federal era practices, to provide economical and efficient medical service system giving priority to primary health care in accordance with the “Manas Health Care Reform Program”. In particular it emphasizes the establishment of an efficient referral service system from primary medical care to the tertiary medical care with the drastic reduction of hospitals, hospital beds and staff by the unification and reorganization of hospitals at both the national and local level.

A financing crisis has arisen due to the economic slump following independence resulting in a decrease of budget support for the national health care system. The decreased levels of diagnosis and treatment in each medical facility due to a shortage of medicine and ageing equipment has had a serious negative impact on the health of the nation. After 1996 this was reflected in health statistics; Infant Mortality is 22.6/1,000 births, Maternal Mortality is 46.5/100,000 births. These figures need to be dramatically improved to reach European standards even though there was some improvement in 2000. Also there is a requirement to cancel regional differences on health statistic compilation. There is also a requirement to address increasing incidences of perinatal disease, now the second cause of infant death, and anemia during pregnancy caused by under nourishment.

In light of this situation the object of this project is to procure medical equipment necessary for improved health service delivery for the following four facilities and to improve the referral system in obstetrics and gynecology and as a result to improve the health of mothers and children across the nation.

(1) Human Reproduction Center

1. After changing the name and function to the “National Center of Obstetrics and Gynecology” with the establishment of an obstetrics section and increasing to 108 hospital beds, this facility will become the top referral hospital for obstetrics and gynecology in Kyrgyz.
2. The main medical equipment: X-ray Unit, Mammography, Ultrasound Scanner, Anesthesia Apparatus, Laparoscope, Electrosurgical Unit, Operating Table, Infant Incubator, Defibrillator, Bedside Monitor, Ventilator, Hematology Analyzer, Biochemical Analyzer, Binocular Microscope, Autoclave, Surgical Scrub Station, Phototherapy Unit, etc.

(2) Naryn Oblast Merged Hospital Obstetrics and Gynecology (85beds / 478beds): Top referral hospital of obstetrics and gynecology in Naryn Oblast

The main medical equipment: Fetal Monitor, Hot Air Sterilizer, Infant Incubator, Infant Warmer, Ventilator, Bedside Monitor, Phototherapy Unit, Autoclave, Electrocardiograph, Operating Table, Electrosurgical Unit, Anesthesia Apparatus, Defibrillator, Ultrasound Scanner, Biochemical Analyzer, Hematology Analyzer, Delivery Table.

(3) Issyk-Kul Oblast Merged Hospital Obstetrics and Gynecology (110beds / 710beds): Top referral hospital of obstetrics and gynecology in Issyk-Kul oblast.

The main medical equipment: Ventilator, Patient Monitor, Defibrillator, Anesthesia Apparatus, Operating Table, Operation Light, Electrosurgical Unit, Autoclave, Fetal monitor, Ultrasound Scanner, Colposcope, Syringe Pump, Infant Incubator, Infant Warmer, Phototherapy Unit, Biochemical Analyzer, X-ray Unit.

(4) Talas Oblast Merged Hospital Obstetrics and Gynecology (115 beds / 320 beds): Top referral hospital of obstetrics and gynecology in Talas Oblast.

The project will contribute to the improvement of obstetrics and gynecological medical care in the entire Kyrgyz Republic together with the loan project provided by the German Republic, being the procurement of medical equipment for obstetrics and gynecology for medical facilities in Osh and Jalah-abad Oblast based on "Mother and child health improvement program".

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

(1) Basic concept

1. The medical equipment plan is to comply with the "Manas Health Care Reform Program" seeking to improve the medical care system and to construct a referral system
2. The medical equipment plan is to be balanced with the procurement plan for equipment provided with German Republic aid for obstetrics and gynecology of medical facilities in Osh and Jalah-abad Oblast.
3. The object of this project is to improve the level of obstetrics and gynecological medical care for the general public including the poor of Kyrgyz, as opposed to high level care.
4. As the objective facilities are third referral medical facilities for obstetrics and gynecology in the national or oblast level the equipment to be procured should be very cost-effective.
5. In consideration of the management capability of the object facilities (number of medical staff, technological level, finance, access to medical consumables and spare parts etc.), the procurement plan seeks to establish technical and financial security.
6. The procurement plan for Human Reproduction Center is to be a major undertaking because of the establishment of a new obstetrics capability.

(2) Environmental Considerations

Equipment procured under this project is not influenced directly from adverse weather as its installation and operation shall occur indoors. However, the following points are especially noted because the temperature of some region in Kyrgyz falls from -10 to -30 in winter.

1. One ambulance car is included in this project for the Issyk-Kul Oblast Merged Hospital. The temperature in this region falls to -20 in winter and engines have problems starting at -10 or less. Therefore considerations between a gasoline or diesel vehicle and other specifications need to be taken into consideration.
2. It is necessary to pass the mountainous region where an altitude of over 2,200 meters presides in order to go to the Naryn Oblast Merged Hospital about 380km from Bishkek, and the snowfall and ice on the road in winter becomes a problem. Also, because of the freezing of the road, it is at times a problem to go to the Issyk-Kul Oblast Merged Hospital about 420km from Bishkek. The transportation of procured equipment in the severe winter season, from December to March, is to be avoided. Therefore under this project it is required that all transportation in Kyrgyz to be implemented within the period from April to November.

(3) Procurement in Third Countries

Most consumables and reagent of equipment used in medical facilities in Kyrgyz depends upon imports. It is important that the purchase of the spare parts, consumables, reagent and after-service of

the equipment procured under this project is able to be implemented at a reasonable price immediately after delivery to the Ministry of Health and the objective facilities. Also the agencies of procured equipment manufactured in European companies need to be established in Kyrgyz or neighboring countries. Therefore consideration will be given for the procurement of equipment from third countries under this project.

(4) Operation and Maintenance Capabilities of the Objective Facilities

A satisfactory number of the medical staff (doctor, engineer, and nurse) working in the objective facilities possess the necessary high technological level skills for operating and maintaining the procured equipment.

For example several ultrasound engineers are working in the Human Reproduction Center and one of them has trained in the USA on operating the ultrasound scanner with color doppler. Therefore the project will have fewer problems procuring an ultrasound scanner with color doppler for that facility.

Though the introduction of new equipment is planned for obstetrics and gynecology in the oblast merged hospitals there will be minimal problems if the medical staff receive sufficient explanation for the operating and maintenance procedures. It was confirmed that the staff would receive the required training in Bishkek if necessary.

Therefore adequate guidance for the operation and maintenance of introduced equipment procured under this project is required for the staff working in the objective facilities.

(5) Range and Grade of Equipment to be Procured

The appropriate amount of equipment is to be decided from the viewpoint of necessity for diagnosis and treatment in obstetrics and gynecology taking into consideration the current status of equipment in each object facility. The specification of the equipment is to be decided taking into consideration current systems and related abilities to operate and maintain the equipment after the procurement. Moreover, the following are to be examined in the equipment plan based on the status of infrastructure in the objective facilities:

1. A voltage stabilizer is to be attached to equipment to account for erratic power supplies and power failures in the objective facilities. The power supply units (battery) are to be attached to the mobile operating lights used in operating rooms and the delivery room taking into consideration existing equipment specifications.
2. Though the water supply in each objective facility is reliable the water quality is hard. Therefore consideration must be given regarding attaching a water softener on equipment such as Autoclave.
3. It is a principle in this project not to include the procurement of medical consumables and reagent. Though in consideration of the economic situation and the progress of national health care reform in Kyrgyz and to make the best use of the effect of the equipment procured, some consumables and reagent procurement may be considered. However X-ray film and other costs which are supposed to be borne by the patient in

Kyrgyz and reagent such as short reservation periods, are to be excluded.

(6) Term of Work

This project is scheduled to be completed within a single fiscal year. However the climate in Kyrgyz may result in transportation delays due to roads freezing from December through March. Therefore it is imperative to complete equipment transportation into the objective facilities by the end of November in order to ensure project time frames are maintained.

2-2-2 Basic Plan (Construction Plan / Equipment Plan)

2-2-2-1 Outline of the Project

(1) Human Reproduction Center

In the list of the medical equipment requested for the first basic study executed in 1999, equipment for an IVF (In Vitro Fertilization) capability was included with expansion of the delivery section considered. Such equipment was removed from the list of final requested equipment based on the understanding that the equipment was not to the main purpose of Japan's free fund cooperation activities.

The existing facility was formerly a rehabilitation facility and construction was halted when it was merged into this facility, so that renovation work is continuously under way. Installation of the delivery section and X-ray diagnosis section which accompanies the enhancement of obstetrics capabilities will be solved through simple renovation work. The budget funding is secured for the renewal work and construction is under way. Each infrastructure facility has a capacity to accommodate the equipment to be procured.

(2) Naryn Oblast Merged Hospital

One of the objective facilities, the obstetrics and gynecology department (68 beds) of Naryn Oblast Hospital (365 beds) begun medical activity as a branch hospital with 101 beds including of a surgical section with 33 beds at Razacova street, some distance from the center of city where the central hospital at was located on Kirovia street, separated by the Naryn river. However, in April 2000 in accordance with the plan to streamline the existing five facilities with a total of 639 beds including Naryn Oblast Children the objective facility is to make a fresh start as a branch hospital with 85 beds in the merged obstetrics, 25 beds from Naryn Central Rayon Hospital with 140 beds creating Naryn Oblast Merged Hospital with 478 beds.

At the same time the Government of the Swiss Republic is facilitating renovation work on four central rayon hospitals in Naryn Oblast via a grant aid project through the Swiss Red Cross. A project for renovation of Naryn Oblast Merged Hospital was being considered. As the result of preliminary investigation of the Oblast Merged Hospital (Table2-1) by the Swiss Red Cross, discussion was made with the Ministry of Health in Kyrgyz was made on the feasibility of cooperation and the schedule.

Table 2-1 Preliminary Study by Swiss Red Cross

1	From among the complexes in Kirovia street (comprising a variety of facility group in terms of year of construction and structure where plural hospitals merged other than former oblast hospitals are found), buildings which can be used with renovation work are selected.
2	In case the scale of the currently distributed merged hospitals is reduced from 478 beds to 300 beds, study is made on the possibility of accommodating all the capabilities in the buildings selected under 1.

As a result of the study, it is found that about three buildings out of the complexes of the hospital can be used after renovation work and that it is impossible to accommodate all the capabilities in these buildings. The objective facility (branch hospital for obstetrics and gynecology)

in Razacova street will continue medical care activities for the time being at the current location.

Cooperation on the Swiss side will focus on the technical cooperation and will not include provision of equipment.

While the budget funding for solving shortage of capacity and expansion of transformers was a problem, the Hospital settled this problem by transporting transformers from other facilities.

(3) Issyk-Kul Oblast Merged Hospital

Issyk-Kul Oblast Maternity Hospital (160 beds) was an independent hospital during the first site investigation in 1999. However, in accordance with the streamlining plan ten facilities including in April 2000 there was a merger of Issyk-Kul Oblast Children Hospital with 135 beds, Issyk-Kul Oblast Hospital with 450 beds and other ten facilities. The objective facility made a fresh start as the obstetrics and gynecology department with 135 beds of Issyk-Kul Oblast Merged Hospital with 710 beds. Moreover, only the streamlining of the organization has proceeded, the facilities of the merged hospital remain divided into three sites plus . There are head quarters, administration and management office on the first site (the site of the former Oblast Bureau of Public Health). On the second site, named as “Complex No. 1” there are 290 beds consisting of internal medicine, surgery and others mainly conducted by the old oblast hospital. On the third site, “Complex No.2” there are 345 beds consisting of obstetrics, gynecology, pediatrics and psychiatry and others mainly conducted by the old oblast maternity hospital and on other sites there is a tuberculosis ward with 40 beds and rehabilitation facility with 70 beds.

It is said that the objective facilities do not require major renovation work under this procurement project.

(4) Talas Oblast Merged Hospital

This facility was not surveyed due to the security problem of Kyrgyz and was excluded from the object facilities of this project. Because of the strong request by the Kyrgyz side for the facility to be included in this project and the improvement of security situation, the site investigation for this facility is included in the explanation of the draft.

This facility, same as other facilities, was established as a result of streamlining of the former Talas Oblast Hospital (300 beds in 1999) and other medical care facilities in April 2000. The hospital is renamed as the Talas Oblast Merged Hospital (300 beds) and obstetrics and gynecology department (115 beds). As of May 2002, the total number of beds is 224, of which the obstetrics and gynecology department, 85 beds.

The obstetrics and gynecology department as an objective facility of the project is to be moved to a facility under construction at a site some 3 kilometers away from the current location. The facility under construction was formerly designed as a hospital holding 105 beds in 1988 in the Soviet Union era. Construction was suspended due to the collapse of the Soviet Union but was restarted with the aid of the World Bank in 1999 and was partially completed in 2000. Now the facility is used as a pediatrics ward.

The objective obstetrics and gynecology department (two-story) and the X-ray analysis department (one-story building) are under interior work slated for the end of August this year.

2-2-2-2 Equipment Plan

(1) Examination of the Details of the Request

1. Human Reproduction Center

-1. X-ray Unit (New Purchase): Patients take X-ray pictures at the other hospitals introduced because of no X-ray Unit in this facility. 8,216 patients took the pictures at the other hospitals introduced in 2001. 7,696 cases of 8,216 cases were general radiography and the other 512 cases were fluoroscopy. It is forecasted that the number of inspection increase to about 10,500 cases (25-30%) per year, after procurement of X-ray Unit in this facility.

The main purposes of X-ray diagnosis in the future are the chest X-ray for every patient and diagnosis of tumor in gynecology including the uterus and uterine tube contrast radiography.

It is reasonable to procure an X-ray Unit under this project because of essential to the national third medical institution of OBGY.

-2. Mammography (New Purchase): Patients required mammography diagnosis are introduced to other hospitals because of no mammography device in this facility. Number of mammography diagnosis is 2,740 cases in 2001 and it is forecasted that the number of inspection increase to about 3,800 cases (30-45%) per year, after procurement of Mammography in this facility.

It is the obligation for women over 40 years to take a mammography once a year in Kyrgyz and this facility is going to execute the diagnosis of breast cancer and mastopathy. Therefore, a Mammography is to be procured under this project.

-5. Ultrasound Scanner, Color Doppler (New Purchase): As this facility is the national third medical institution of OBGY, they are going to diagnose abnormal pregnancy, embryo (fetus) congenital disorder, ovary hemorrhology and blood flow of malignant tumor. In this facility, several ultrasound technicians are working and one of them has the experience of six years working, training in USA and technology enough of Color Doppler. Therefore, it is no problem to procure this equipment in this facility on the operation and maintenance.

As they are going to execute about 3,500 diagnoses a year in the future, an Ultrasound Scanner with Color Doppler is to be procured under this project.

-6. Ultrasound Scanner, Black and White (Replacement): Two Ultrasound scanners are being used for more than ten years in this facility and they are very decrepit. 21,184 ultrasound diagnoses are executed in 2001 including of 13,622 diagnoses in gynecology and 7,513 diagnoses in obstetrics.

They are going to increase about 20 % of ultrasound diagnoses in the future, so that one of two existing equipment is to be renewed under this project.

-7. Electrocardiograph (New Purchase): Electrocardiograph is essential equipment for the national third referral institution of OBGY. One Electrocardiograph is to be installed even though new procurement because of no problem on operation and maintenance.

-8. Anesthesia Apparatus (Replacem./Replenish.): One anesthesia apparatus sharing in two operating rooms of gynecology is to be renewed because of decrepitude. Moreover, one anesthesia apparatus is to be procured because of necessity for new operation room of establishment of obstetrics section newly. So that two anesthesia apparatus are to be procured under this project.

-9. Cystoscope (New Purchase): They are executing the 25 operations a year using cystoscope borrowed from other hospital because of no one. They are going to execute more than 100 operations a year in the future. Therefore, one cystoscope is to be procured under this project.

-10. Hysteroscope (Replacement): The existing hysteroscope can not be used any longer because they are very old. However, since in the facility the demand for hystero-resectoscope usage is higher than hysteroscope, a hystero-resectoscope will be procured instead of Hysteroscope.

-11 Hystero-Resectoscope (New Purchase): Because of decrepitude, the existing hysteroscope is not be using in this facility. Therefore, one hystero-resectoscope is to be procured instead of existing equipment because of wider range under this project.

-12 Laparoscope (Replacement): Existing laparoscope occurs the troubles on the operation sometimes because of exceeding durable years. They are going to execute 200-220 operations a year in the future, though execution of only 62 operations in 2001. Therefore, a laparoscope is to be renewed under this project.

-15. Electrosurgical Unit (New Purchase): Two electrosurgical units are to be procured under this project because of essential equipment for the operation even though no using in the existing facility, one unit in the major operation room in gynecology and the other one in operation room in obstetrics.

-17. Operating Table (Replacem./Replenish.): Because of difficulty of contentiously using of the 2 decrepit existing operation tables made in 1977, the renewal is required. The additional operating table is required for new obstetrics section to be established hereafter. Therefore, three operation tables are to be procured under this project.

-18. Operating Light (Replacement): The existing operating lights being used in two operation rooms of gynecology manufactured in 1977 have caused troubles because of the difficulty of valve exchanging due to exceeding durable years. Three operating lights are requested for two in gynecology and one for obstetrics to be established. Though, only the two operating lights are to be procured because of impossibility to install the light on the ceiling slab in new obstetrics operation room due to rack of anchor steel. One mobile operating light is to be procured in obstetrics.

-19. Mobile Operating Light (Replacem./Replenish.): Three mobile operating lights are to be procured in a operation room and two delivery rooms according to the establishment plan of

obstetrics by the Kyrgyz side.

Moreover, because of rack of one operation light in existing gynecology, totally four mobile operating lights are to be procured under this project.

-20. Electrical Suction Unit, Large Size (Replacem./Replenish.): One existing decrepit and small suction unit manufactured in 1990 is shared to use in two operation rooms in gynecology. Three electronic suction units with volume 3,100 cc are to be procured in two operation rooms of gynecology and one operation room of obstetrics under this project.

-21. Electrical Suction Unit, Small Size (Replacem./Replenish.): Because of necessity to procure in two delivery rooms arranged by the Kyrgyz side, two electric suction units with volume 1,000cc are to be procured under this project.

-23. Mobile Quartz Lamp (Replacem./Replenish.): Because of no function of existing equipment due to decrepitude, it is reasonable to procure the equipment.

Five mobile quartz lamps are to be procured; the two renewed in the existing operation rooms of gynecology, the one newly in an operation room and two newly in delivery rooms of obstetrics section arranged by the Kyrgyz side under this project.

-26. Hot Air Sterilizer, Medium Size (Replacem./Replenish): Though ten hot air sterilizers are being used in this facility, four of them manufactured in around 1972-1983 are to be renewed because of decrepitude badly under the this project; each one to sterilizing room of obstetrics, sterilizing room of gynecology, laboratory and wards.

-27 Fetal Monitor (New Purchase): This equipment is essential because of the objective facility be changed to the national third medical institution of OBGY. Equipment is procured in every two delivery room under this project.

I-28. Infant Incubator (New Purchase): The bed requirement for the facility planned by Kyrgyz side is 108 beds comprising 50, 30, 20, and 8 beds in the gynecology, obstetrics, infant, and reanimation, including the ICU, respectively. The 20 infant beds are divided into six infant incubators and 14 beds for newborns. Therefore, six new Infant Incubators will be procured in this project.

I-29. Weighing Scale, Infant (New Purchase): Five new infant weighing scales will be installed in this project to fulfill the requirement of one scale each for the delivery department, operating department, newborn intensive care unit (NICU), infant room, and general ward, as demanded by the obstetrics department.

I-30. Suction Unit, Gyne-Obstetric (New Purchase): A suction unit is primarily used for delivery, although it can be used for general suction and premature, artificial termination of pregnancy. However, in Kyrgyz, the use of suction unit for delivery is not common, and the facility needs the

suction unit for premature termination of pregnancy. Hence, a gyne-obstetric suction unit will be procured for the treatment of malformation or pregnant women who are unable to deliver because of some difficulties in their body. However, this unit will not be exclusive for premature termination of pregnancy, but can be used for ordinary suction.

I-31. Infant Warmer (New Purchase): Eight new infant warmers will be procured under this project, which allocates 2, 1, 2, 1, and 2 warmers to the delivery department, operating department, NICU, infant room, and ward rooms, as demanded by the obstetrics department.

I-34. Delivery Table (New Purchase): One new delivery table each will be appropriated to the two delivery rooms, as demanded by the obstetrics department.

I-37. Defibrillator (New Purchase): A new defibrillator is included in this project because it is a critical instrument for the facility, which will be established as a third class national hospital of obstetrics and gynecology.

I-38-1. Patient Monitor (New Purchase): Patient monitors are currently not available at the facility, but they will be critically needed when the facility is established as a third class national hospital of obstetrics and gynecology. Although this is the first introduction of patient monitors, there will be no major problems related to the management of their operation and maintenance. One new patient monitor each will be allocated to the two operating rooms of gynecology and a future operating room of obstetrics.

I-38-2. Bedside Monitor, Adult (Replenishment): Based on the requirement of the facilities, this project includes four adult bedside monitors, allocating one each to the two single rooms of ICU, one to the single room of reanimation treatment, and one to the 5-bed room of reanimation.

I-39-1. Bedside Monitor, Infant (New Purchase): Based on the requirement of the facility, two new infant bedside monitors will be procured in this project.

I-39-2. Pulse Oximeter, Infant (New Purchase): Based on the requirement of the facility, four new infant pulse oximeters will be procured in this project.

I-40. Ventilator, Adult (New Purchase): Based on the requirement of the facility, this project includes two new adult ventilators, allocating one to the reanimation room and the other to the ICU.

I-41. Blood Gas Analyzer (New Purchase): The Human Reproduction Center is a national, tertiary-level obstetrics and gynecology hospital so that the blood gas analyzer is highly required. However, a blood gas analyzer requires a certain cost for maintenance irrespective of the frequency of requested tests. Monthly reagent expenses will be about 15,000 soms (about ¥43,000), and annual maintenance cost including the replacement parts such as electrodes will be about 340,000

soms (about ¥951,000). Conference was made with the persons concerned in Kyrgyz as to whether the blood gas analyzer is to be procured. As a result, the Kyrgyz side promised that the Ministry of Health will assure the maintenance cost for the blood gas analyzer. Thus, one new blood gas analyzer will be procured in this project.

I-42. Infusion Pump (New Purchase): The Kyrgyz side is currently reviewing its facility improvement plan and operation plan. Accordingly, this project proposes five Infusion pumps corresponding to one twentieth of 88 beds (20 infant beds excluded). These infusion pumps will be shared by all pertinent departments of the facility so that their maintenance cost can be minimized.

I-43. Medical Refrigerator (Replacem./Replenish): Based on the requirement of the facility, one unit each of medical refrigerator will be allocated to the delivery department (including obstetrics operating rooms), the clinical laboratory test department, the gynecology operating section, the ICU and reanimation, and the ward.

I-44. Colposcope (Replacement): The existing colposcope has been used for more than 10 years, and is deteriorated because of extensive use. Currently, about 1,500 examinations are carried out annually, and much more examinations are expected in the future when facilities and equipment are improved allowing a greater demand in colposcopy. Therefore, the existing colposcope will be renewed in this project.

I-45. Fluorescent Microscope (Replacement): The present fluorescent microscope in use is deteriorated because it has been used for about 25 years (since 1977) for fetal chromosome testing. In addition, a fluorescent microscope will be needed also as one of pertinent instruments for bacteriological test (manual methods), which will be procured in this project. Thus, the existing fluorescent microscope will be renewed in this project.

I-47. Incubator (Replacement): Bacteria under examination will be cultured in an incubator typically for one to three days in the conditions favorable for their growth. The facility requests an outside laboratory to make about 10 examinations per day (in 2001). Accordingly, 30 petri-dishes will be needed if three cultures are used for each of pure culture, and additional 10 petri dishes will be needed for general culture. Most bacteria favor the temperature of 37 °C close to the bodily temperature for their growth, but rarely some bacteria favor higher or lower temperatures. These situations are considered so that two incubators will be installed in this project.

I-50. Ultra Low Temperature Freezer, Large (New Purchase): This project excludes large ultra low temperature freezer because it is generally not required in an obstetrics and gynecology hospital.

I-51. Ultra Low Temperature Freezer, Small (New Purchase): A compact ultra low temperature freezer is usually unnecessary. Instead, however, a freezer will be procured for the purpose of enabling the preservation of plasma for transfusion.

I-52. Fetoscope (New Purchase): This Project excludes fetoscope because it is generally not used in an obstetrics and gynecology hospital.

I-63. Hematology Analyzer (New Purchase): The facility's current practice for counting of blood cells, such as leukocytes, erythrocytes, and platelets uses microscope observation after staining with an output of about 110 tests a day. The installation of a hematology analyzer will minimize the spread in observation results among laboratory workers and improve the examination efficiency. One unit of hematology Analyzer will be procured, which is simple in the principle of operation and of which maintenance does not require expertise.

I-64. Biochemical Analyzer (New Purchase): Currently at the facility, 40 to 50 biochemical tests are carried out manually by using a spectroscope and test-kit reagents. The installation of an automated biochemical analyzer will reduce the amounts of reagents used and consequently its maintenance cost, and will minimize the spread in observation results among laboratory workers and improve the examination precision and efficiency. It is also helpful that the laboratory test-kits used thus far can be used and that a reagent supplier is already available.

I-65. Immune Enzyme Analyzer (New Purchase): In 2001, 497 immunological tests were carried out at the facility. This figure suggests that a large-capacity analyzer is not needed, but combinations of semi-automated instruments will suffice. Hence, this project will procure the following: (1) a Microplate Reader (this device is relatively versatile, and will be able to cope with increases in request of tests in the future), (2) a Microplate Washer (this device is used for washing away from wells other than the blood cells that react with the enzyme during the immunoenzymatic reaction on the microplate), (3) a Shaker Incubator, and (4) Small Instruments for I. E. Test.

No difficulties are anticipated in terms of both assay techniques and instrument maintenance because the laboratory technologist in charge at the facility has an experience of 20 years and is one of the leading persons in this field.

I-66. Bacteriological Analyzer (New Purchase): The instruments required for bacteriological tests are not available at the facility, and test specimens are turned over to a commercial laboratory test center. The tests of 2,028 specimens was entrusted in 2001. The test cost for identification test and drug susceptibility test, about 1,100 soms (about ¥3,000) per specimen, is rather expensive. Thus, manual methods, which are relatively inexpensive, are suggested for the bacteriological examination because the laboratory technologist has an experience of 20 years and there are no problems regarding the testing by way of manual methods. Hence, this project will procure the following: (1) an Incubator, (2) a Laminar, (3) an Autoclave (Bact. Test), (4) an Analytical Balance, (5) a Microscope, (6) a Freezer, and (7) Small Instruments for Bact. Test.

I-67. Binocular Microscope (Replacement): The existing binocular microscopes are deteriorated, and two binocular microscopes will be renewed for the purpose of urinary sediment and bacteriological tests.

I-68-1. Centrifuge, Table-top Type (Replacement): In 2001, the existing device is routinely used for the centrifugation of about 50 specimens for biochemical tests, about 110 specimens for general tests, and about 15 specimens for clotting tests per day, and is markedly deteriorated. Since a reliable centrifuge is indispensable in a clinical laboratory, a centrifuge of table-top type will be renewed.

I-68-2. Centrifuge, Refrigerated (New Purchase): This project excludes refrigerated centrifuge because it is generally not used in an obstetrics and gynecology hospital. Instead, a new hematocrit centrifuge will be procured, which may be required in the ICU of the facility.

I-69. Coagulometer (New Purchase): Manual methods are currently used for blood clotting test, and 3,009 tests were carried out in 2001. However, the number of requested tests is expected to increase when the facility is established as a national hospital of obstetrics and gynecology. Installation of a semi-automated instrument for blood clotting test will minimize the spread in precision among laboratory workers and reduce the time required for test. Furthermore, with a semi-automated instrument, examination processes become simple and its maintenance can be less problematic. Hence, this project will procure a new coagulometer.

I-71. Urine Analyzer (New Purchase): The Hospital desires a qualitative urine analyzer that facilitates visual observation of changes in color of test paper. However, the Hospital's current level of test order is about 10 tests per day, and if increased, at most about 12 tests per day in the future. It is suggested, therefore, that the level of test order is so low as to allow a urine analyzer in terms of cost-effectiveness that urine analyzer is excluded from this Project.

I-78. Autoclave, Large (Replacement): The facility uses two units of autoclave, which have been used for longer than their useful life (procured in about 1988), which require frequent repair, and hence their renewal urgently. Because the facility was opened in 1998, and the obstetrics department is not yet operating, the amounts of materials to be sterilized cannot be predicted definitely at present. Therefore, this project uses similar data available in Japan to predict the amounts of materials to be sterilized so that the capacity and number of units of autoclave can be determined. The following data are assumed for this calculation:

(1) Operating department: (five operations per day at three operating rooms); $5 \times 150,000 \text{ cm}^3 = 0.75 \text{ m}^3/\text{day}$

(2) Delivery department: (five deliveries per day at two delivery rooms); $5 \times 90,000 \text{ cm}^3 = 0.45 \text{ m}^3/\text{day}$

(3) Wards: (108 beds); $108 \text{ beds} \times 4,000 \text{ cm}^3 = 0.43 \text{ m}^3/\text{day}$

(4) Outpatients (obstetrics and gynecology, etc.): $0.11 \text{ m}^3/\text{day}$ (based on the reference value of 0.1 m^3 per day per 100 beds in Japan and converted to 108 beds in the objective facility)

The total amount of above is $1.74 \text{ m}^3/\text{day}$.

Suppose that the daily working hours are seven hours and the operation cycle of an autoclave is 50 minutes; then, the possible number of autoclave operations is given by $420 \text{ min} \div 50 \text{ min/time} = 8.4$ 8 times. In reality, 50% duty operation of autoclave is preferable, and the practical number of autoclave operations is given by $8 \text{ times} \div 0.5 = 4 \text{ times}$. Then, suppose an autoclave that has the sterilizing capacity of 0.225 m^3 . The daily sterilizing capacity per unit is given by $0.225 \text{ m}^3/\text{time} \times 4 \text{ times} = 0.9 \text{ m}^3/\text{day}$. In conclusion, two units of an autoclave having the capacity of 225 L can provide the required daily sterilizing capacity ($0.9 \text{ m}^3/\text{day} \times 2 \text{ units} = 1.8 \text{ m}^3/\text{day}$).

I-79. Washing Machine (Replacement): The existing washing machines are worn-out and irreparably damaged. In the Human Reproduction Center, about 280 kg of operating gowns and sheets are washed daily at present. Suppose that the daily working hours are 10 hours, eight in daytime and two at night, and the operation cycle of a washing machine is one hour; then, the possible number of washing machine operations is given by $10 \text{ h} \div 1 \text{ h/time} = 10 \text{ times}$. In reality, however, 50% duty operation is preferable, and the practical number of washing machine operations is given by $10 \text{ times} \div 0.5 = 5 \text{ times}$. Then, suppose a washing machine that has the washing capacity of 30 kg. The daily washing capacity per unit is given by $30 \text{ kg/time} \times 5 \text{ times/day} = 150 \text{ kg/day}$. Thus, it is concluded that 280 kg of washing materials per day can be cleaned by using two units of a washing machine having the capacity of 30 kg ($280 \text{ kg} \div 150 \text{ kg} = 1.87 \text{ units} \approx 2 \text{ units}$).

I-84. Surgical Scrub Station (Replacem./Replenish): A surgical scrub station is required in the gynecology operating room in the facility to renew the current practice of ordinary hand-washing. Furthermore, an additional surgical scrub station is needed for the obstetrics department (one operating room and two delivery rooms) which will be established by Kyrgyz side. Therefore, this project will procure two surgical scrub stations.

I-88. Gatch Bed (Replacem./Replenish): The existing gatch beds are deteriorated and their elevation action is disabled; thus, their renewal is needed. Based on the requirement of the facility, this project will procure eight gatch beds, allocating to the reanimation room (six beds) and the ICU (two single rooms).

I-93. Fetal Doppler (New Purchase): Fetal doppler are indispensable for the obstetrics department. Three new fetal doppler will be procured; one each for the two labor rooms and the other for the outpatient department.

I-94-2. Gynecological Examination Unit (Replacement): This project will renew the existing units that are deteriorated, and procure one gynecological examination unit each for the gynecology consulting room, the obstetrics consulting room, the colposcope room, the consulting room in the obstetrics ward, and the consulting room in the gynecology ward.

I-95. Phototherapy Unit (New Purchase): Based on the requirement of the obstetrics department, this project will procure four new phototherapy units; two units for the NICU, one for the infant room,

and the other for common use (among five ward rooms where newborn babies and their mothers are accommodated).

I-97. Ventilator, Infant (New Purchase): Based on the requirement of the obstetrics department, new infant ventilators will be procured. The facility will become established as a third class hospital to which ordinary obstetrics and gynecology hospitals will refer seriously ill patients whom they cannot provide with sufficient treatment so that at least two units will be needed.

I-98. X-ray Densitometer (New Purchase): This project excludes X-ray Densitometer because its installation will not produce a reasonable cost-effectiveness and will not contribute to the “improvement in the indices of mother and infant care,” that is objective of the project.

I-100. Syringe Pump (New Purchase): The Center is currently reviewing its facility improvement plan and operation plan. Accordingly, this Project proposes eight Syringe Pumps corresponding to one fifteenth of 108 beds. Three Syringe Pumps will be allocated to the NICU, two to the reanimation room (six beds), one to the obstetrics delivery and the operating departments, the ICU, and the ward.

I-101. Dionizator (New Purchase): The consumable (RO membrane) for the dionizator costs about 37,000 soms (about ¥10,000), meaning a rather high maintenance cost. In addition, the serviceable life of the consumable depends on the quality of the water supplied by the facilities, and even the sufficient water quality required for purified water may not be obtained in some cases. From these reasons, this project excludes dionizator.

I-104. Laminar (Replacement): One unit of laminar will be procured because cultures for biological test must be lysed and dispensed into petri dishes aseptically within a laminar.

I-105. CO₂ Incubator (New Purchase): This Project excludes CO₂ Incubator, which is generally not required in an obstetrics and gynecology hospital.

I-106. Freezer, Horizontal Type (New Purchase): Based on the requirements of the facility and equipment under the Kyrgyz side plan, this project will procure a horizontal-type freezer for the purpose of the preservation of specimens and reagents for clinical laboratory tests.

I-108. Shaker Incubator (New Purchase): One unit of shaker incubator will be procured because an incubator is needed to attain a human-body temperature of 37 °C that is required for the reactions of blood cells with enzymes as part of immunological tests.

A summary of review on other items of the requested equipment is given below.

Table 2.2 Review on Other Items of Equipment Requested by Human Reproduction Center

No.	Description	Classification	Necessity/Relevance
I-3	Film Developing Machine	New Purchase	Indispensable for the installation of both the x-ray unit and the mammography
I-4	X-ray Instrument Set	New Purchase	Idem
I-13	Paraphormalin Sterilizer	Replacement	Indispensable for the usage of the laparoscope, etc.
I-14	Cleaning Accessories Set	Replacement	Idem
I-16	Plastic Surgery Set, Gynecology	Replacement	Replacing the existing one that is worn-out
I-24	Operating Instrument Set	Replacement/ Replenishment	Procure five sets based on 1,350 operations per year \div 250 days = 5.4 operations per day, based on Kyrgyz side plan.
I-32	Reanimation Set, Infant	New Purchase	Procure eight sets based on the Kyrgyz side plan: two for the delivery rooms, one for the operating room, two for the NICU, one for the infant room, and two for ward rooms
I-33	Reanimation Set, Adult	Replacement/ Replenishment	Renew the existing one in the gynecology operating room. Procure additional one each in the ICU and the obstetrics operating room, which will become established.
I-35	Delivery Instrument Set	New Purchase	Procure six sets based on 1,850 deliveries per year \div 360 days = 5.13 deliveries per day, based on the Kyrgyz side plan.
I-36	Basinet	New Purchase	Excluded because this unit may be purchased by the Kyrgyz side efforts.
I-48	Analytical Balance	Replacement/ Replenishment	Replace the existing one. Procure additional one for bacteriological examination.
I-49	pH Meter	Replacement	Renew the existing one that is worn-out.
I-53	Diathermocoagulator	New Purchase	Procure one unit because 750 to 800 treatments per year are expected under the Kyrgyz side plan.
I-54	Cryodestructor	New Purchase	Idem
I-55-1	Gynecological Instrument Set	Replacement	Renew the existing set that is worn-out.
I-55-2	Gynecological Diag. Instrument Set	Replacement	Idem
I-55-3	Cesarian Instrument Set	New Purchase	Procure two sets based on the requirement of the obstetrics department.
I-56	Drum, Large Size	Replacement/ Replenishment	Procure 34 drums with the dimensions of 360 ϕ and 240 (h) mm so that 17 runs of sterilization (17 runs x 2 drums/run = 34 drums) are enabled.
I-57	Drum, Medium Size	Replacement/ Replenishment	Procure 36 drums with the dimensions of 270 ϕ and 180 (h) mm so that 6 runs of sterilization (6 runs x 6 drums/run = 36 drums) are enabled.
I-58	Drum, Small Size	Replacement/ Replenishment	Procure 27 drums with the dimensions of 180 ϕ and 120 (h) mm so that 3 runs of sterilization (3 runs x 9 drums/run = 27 drums) are enabled.
I-59	Stand for Drum	Replacement	Excluded because the existing one will be used from now onward.

No.	Description	Classification	Necessity/Relevance
I-60	Boiling Sterilizer	Replacement/ Replenishment	Renew the two existing units that are worn-out. Procure two additional units based on the requirement of the obstetrics department.
I-61	Laryngoscope Set, Adult	Replacement/ Replenishment	Renew the two existing sets in the gynecology operating section and one existing set in the reanimation room. Procure an additional set each in the obstetrics operating room and the ICU.
I-62	Instrument Table	Replacement/ Replenishment	Procure 10 units: 8 for the obstetrics department, one for the reanimation room, and one for the ICU.
I-72	Water Distiller	Replacement	Renew the existing one that is worn-out.
I-83	Chorion Biopsy Forceps	Replacement	Excluded because there are no commercially-available forceps that can be used to collect a sample of membrane.
I-85	Stretcher	Replacement/ Replenishment	Procure four sets: two sets for the obstetrics department, and two for the gynecology department (operating section as well as reanimation room and ICU).
I-90	Metal Basin	Replacement/ Replenishment	Excluded because this unit may be purchased by the Kyrgyz side own efforts.
I-91	Medical Chair	Replacement	Idem
I-92	Maintenance Tool	New Purchase	Excluded because the Center has no department in charge of maintenance.
I-94-1	Gynecological Table	Replacement	Excluded because this unit may be purchased by the Kyrgyz side own efforts.
I-96	Film Illuminator	New Purchase	Install one unit in the X-ray room, one in the two gynecology consulting rooms, one for the gynecology operating section, and one in the gynecology consulting room.
I-99	Weighing Scale, Adult	Replacement	Excluded because this unit may be purchased by the Kyrgyz side own efforts.
I-102	Height Scale	Replacement	Idem
I-103	Laboratory Instrument Set	Replacement/ Replenishment	Procure one set because the existing set is worn-out and incomplete, lacking the whole or part of some instruments.
I-107	Vortex Mixer	New Purchase	Excluded because this unit may be purchased by the Kyrgyz side own efforts.
I-109	Examination Lamp	Replacement	Excluded because one unit is included in the Gynecological Examination Unit that will be procured in this project.

2. Naryn Oblast Merged Hospital Obstetrics and Gynecology

II-2. Fetal Monitor (New Purchase): A fetal monitor is critical for the care of pregnant women with fetal compromise, and it is highly probable that such patients may be referred to the Hospital, which is a third class regional hospital of obstetrics and gynecology. The addition of a fetal monitor to the equipment cluster may contribute to the improvement of the quality of medical care. Although this is the introduction of a fetal monitor, if its operation and maintenance are fully explained to the relevant medical workers during installation, there will be no major problems related to the management of its operation and maintenance. This project includes a fetal monitor for the delivery department.

II-3. Fetal Doppler (New Purchase): This instrument is commonly found in obstetrics and gynecology hospitals even in developing countries. It is reasonable to procure these units of fetal doppler for the Hospital, which is a third class regional hospital of obstetrics and gynecology. Although this is the first introduction of these units, there will be no major problems related to the management of their operation and maintenance. This project will procure three units of fetal Doppler; one unit each for the two labor rooms, and one for the reception consulting room.

II-5. Hot Air Sterilizer, Large Size (Replacement): The large hot air sterilizer existing in the material center was procured in about 1980, and has been used for longer than its useful life. It needs repair from time to time, and it is difficult to continue its use from now onward. Therefore, this project will renew it.

II-6. Hot Air Sterilizer, Medium Size (Replacement): Currently 12 units of medium hot air sterilizer are used at the Hospital. Many of them are worn-out (have been used for more than 10 years and for longer than their useful life), and some units must be renewed. This project will replace the respective units in the NICU, the reception consulting room, the material center, and the obstetrics department.

II-7. Suction Unit, Gyne-Obstetric (Replacement): A suction unit is primarily used for delivery, although it can be used for general suction and premature, artificial termination of pregnancy. However, in Kyrgyz, the use of suction unit for delivery is not common, and the Hospital needs the suction unit for premature termination of pregnancy. Currently in the gynecology treatment room, it is difficult to provide appropriate treatment because of lack of an exclusive suction unit (a suction unit is borrowed from other departments when it is needed). Hence, this project will procure a suction unit for the obstetrics and gynecology departments. However, this unit will not be exclusive for premature termination of pregnancy, but can be used for general suction.

II-10. Infant Incubator (Replacement): The Hospital's year-round number of infants who use an infant incubator is about 105. But, this figure is expected to increase because the Hospital will become incorporated with a regional obstetrics and gynecology hospital. Suppose that the

year-round number of infants who use an infant incubator is $105 \times 1.2 \text{ times} = 126$ per year, and that an infant occupies an infant incubator for 12 days. The number of infant incubators required is calculated as follows: $(126 \times 12 \text{ days}) \div 365 \text{ days} + (1 \text{ incubator is reserved for the case of occupancy longer than 12 days or for failure of some units}) = 4 + 1 = 5$. They have already purchased two units in 1996 and 1999, respectively, so that this Project will procure the remaining three units.

II-11. Infant Warmer (Replacement): There are 16 units in the Hospital at present. In reality, however, only two units existing in the NICU, which were purchased in 1992 and 1999 (manufactured in 1996), can be used. This project will renew three units of infant warmer; two units existing in the two delivery rooms, and one in the obstetrics operating room.

II-14. Mobile Operating Light (Replacement): The operating light in the operating room was purchased more than 10 years ago, and the replacement bulbs are not available commercially (ordinary bulbs are not durable enough, but fail in a short period of time, because it is not manufactured exclusive for operating.). Also in the delivery rooms, the operating lights are not available readily, and ordinary lamps are inconveniently used, which interferes with delivery. This project will procure four units of mobile operating light; two units for the two operating rooms and the other two for the two delivery rooms.

II-15. Electrical Suction Unit, Large Size (Replacement): The existing suction units, which were purchased earlier than 1991 (before the independence of Kyrgyz), are worn-out, and their capacity is so small as 500 or 1000 cc that they are not adequate for an operating room. This project will renew the two units of large electrical suction unit in the two operating rooms.

II-16. Electrical Suction Unit, Small Size (Replacement): The six existing units need renewal because they have been used for more than 10 years and are markedly deteriorated. This project will renew four units of small electrical suction unit: two units in the two delivery rooms, one in the NICU, and one in the ICU.

II-17. Suction Unit, Pedal Type (Replacem./Replenish.): The existing unit is much deteriorated and is already not usable. Some units are indispensable in the country where outage is not rare. This project will procure two units of pedal-type suction unit: one for the operating department, the delivery department and the other for the NICU.

II-21. Ventilator, Adult (Replacement): The existing two units were purchased more than 10 years ago, and have been used for longer than their service life. One unit of them fails frequently, which will be renewed in this project.

II-22. Ventilator, Infant (Replenishment): The Hospital uses one unit of infant ventilator, which was purchased in 1999 (manufactured in 1996). It is highly probable that two units of infant ventilator

are needed at the same time because the Hospital is a third class referral hospital of obstetrics and gynecology and the number of patients is expected to increase when the Hospital becomes incorporated with a regional hospital of obstetrics and gynecology in the future. A standby reserve must be available when the existing one fails or during the regular maintenance period. Therefore, this project will procure an additional unit.

II-23. Infusion Pump (New Purchase): These units of infusion pump are highly required for the Hospital as a third class referral hospital of obstetrics and gynecology. Although this is the new introduction of infusion pumps, if their operation and maintenance are fully explained to the relevant doctors and nurses during installation, there will be no major problems related to the management of their operation and maintenance. This project will procure two units of infusion pump: one unit for the obstetrics department and the other for the gynecology department.

II-25. Bedside Monitor, Adult (Replacement): The total number of patients who were accommodated in the ICU throughout the year 2001 was 281, but this figure is expected to increase when the Hospital becomes incorporated with a regional hospital of obstetrics and gynecology in the future. Furthermore, it is appropriate that the number of units of bedside monitor matches that of ventilator. Thus, two units of bedside monitor will be procured.

II-26. Gatch Bed (Replacement): Currently six units of gatch bed are used in the general ward for those patients who are discharged from the ICU or who are relatively seriously ill. Some of the six units, however, are worn-out and not fully functioning. This project will renew four units of gatch bed; two units in the gynecology department and the other two in the obstetrics department.

II-27. Syringe Pump (Replacem./Replenish.): One unit of syringe pump, which was purchased around 1986, needs renewal because it is deteriorated and does not function properly in some cases. The year-round number of patients who use a syringe pump (especially in the NICU) is about 330 at present. This figure is expected to increase when the Hospital becomes incorporated with a regional hospital of obstetrics and gynecology in the future. Suppose that this figure increases to 1.5 times the current figure (330), namely, 495. The number of days that one patient continues to use a syringe pump ranges from one through six days(times), which means 3.5 days average. Suppose that two patients use the same unit in the same day; then, the number of required units of syringe pump can be calculated as follows: $(495 \text{ patients} \times 3.5 \text{ days}) \div 365 \text{ days} \div 2 = 3 \text{ units}$.

II-28. Phototherapy Unit (Replacement): Currently, the year-round number of patients who use a phototherapy unit is about 115, but this figure is expected to increase when the Hospital becomes incorporated with a regional hospital of obstetrics and gynecology in the future. Suppose that this figure increases to 1.5 times the current figure (115), namely, 173/year. The Kyrgyz side plan describes that the number of days that one patient continues to use a phototherapy unit ranges from two through five days, which means 3.5 days average. Then, the number of required units of phototherapy unit can be calculated as follows: $(173 \text{ patients} \times 3.5 \text{ days}) \div 365 \text{ days} = 2 \text{ units}$.

Because an existing unit is available from now onward, an additional unit will be procured in this project.

II-29. Gynecological Table (Replacement): This Project excludes this item because an existing unit is usable from now onward, and the Hospital may be able to purchase additional ones by its own efforts as the need arises.

II-30 Gynecological Examination Unit (Replacement): The existing treatment tables and examination lights are deteriorated, so that this project will renew the four units of gynecological instrument unit: one unit in the reception consulting room, one in the second-floor gynecology treatment room, and one each in the second-floor and the third-floor obstetrics treatment rooms.

II-32. Medical Refrigerator (Replacement): Some of the seven existing units are worn-out. This project will renew the four units of Medical Refrigerator: one unit in the operating department, one in the ICU, and one each in the second-floor and the third-floor obstetrics wards.

II-35. Autoclave (Replacement): The material center uses two units of autoclave, which have been used for longer than their useful life (procured earlier than 1991), and which need renewal because they are worn-out and require frequent repair. The daily volume of sterilization at the Hospital is 36 drums of the dimensions of 38 ϕ x 19 (h) cm, 42 drums of the dimensions of 32 ϕ x 17 (h) cm, and 60 drums of the dimensions of 15 ϕ x 15 (h) cm, or 1,505 m³ /day in total.

Suppose that the daily working hours are seven hours and the operation cycle of an autoclave is 50 minutes; then, the possible number of autoclave operations is given by $420 \text{ min} \div 50 \text{ min/time} = 8.4$

8 times. In reality, however, 50% duty operation is preferable, and the practical number of autoclave operations is given by $8 \text{ times} \times 0.5 = 4 \text{ times}$. Then, suppose that one autoclave has the sterilizing capacity of 0.163 m³ and the other 0.225 m³. The daily sterilizing capacity per unit is calculated as follows:

$$0.163 \text{ m}^3 \times 4 \text{ times/day} = 0.652 \text{ m}^3 \text{ per day} \times 1 \text{ unit};$$

$$0.225 \text{ m}^3 \times 4 \text{ times/day} = 0.900 \text{ m}^3 \text{ per day} \times 1 \text{ unit}.$$

In conclusion, two units of an autoclave having the capacity of 163 L and 225 L are needed and can provide the required daily sterilizing capacity ($0.652 \text{ m}^3 + 0.900 \text{ m}^3 = 1.552 \text{ m}^3$ per day).

II-36. Patient Monitor (New Purchase): Although the Hospital is currently not equipped with these units, these units are critical instruments for the institution such as a third class regional hospital of obstetrics and gynecology, where surgery operations under general anesthesia are routinely carried out (typically about 10 operations are carried out in the two operating rooms a day). Although this is the initial introduction of patient monitor, if their operation and maintenance are fully explained to the relevant doctors during installation, there will be no major problems related to the management

of their operation and maintenance. This Project will procure two units of patient monitor; one unit for the obstetrics operating rooms and the other for the gynecology operating rooms, because each entrance is apart from one another and one unit cannot be shared by the operating rooms of the two departments.

II-37. Electrocardiograph (Replenishment): The ICU on the first floor at the Hospital uses one unit of electrocardiograph of one-channel type, which was purchased in 2000, and continues its use. Moreover, other departments also need this critical instrument. Therefore, this project will procure two additional units of electrocardiograph: one unit for the second-floor obstetrics ward and the other for the third-floor obstetrics ward.

II-40. Ultrasound Nebulizer (New Purchase): In the country, where it is 2500 meters above the sea level and the air is dry for eight months of one year, many people suffer from bronchopneumonia. The year-round numbers of bronchopneumonia patients are 63, 51, and 34 in the obstetrics, gynecology, and the ICU, respectively (in 2001). However, these figures are expected to increase because the Medical Institution will become incorporated with a regional obstetrics and gynecology hospital. Although this is the first introduction of these units, there will be no major problems related to the management of their operation and maintenance. This project will procure four units of ultrasound nebulizer; one unit for the ICU, one for the gynecology, and one unit each for the second-floor obstetrics ward and the third-floor obstetrics ward.

II-44. Colposcope (Replacement): The worn-out colposcope used in the obstetrics and gynecology department in the Hospital was already disposed of. When a request of colposcopy examination arises, one unit is borrowed from the gynecology outpatient department on the first floor in the Hospital (this department is beyond the scope of this project). In 2001, 1320 requests of colposcopy examination must have been carried out, but only 250 among them (about 20%) were carried out due to the lack of an exclusive unit. In response to the high demand for the colposcopy examination in the Hospital, this project will procure one unit of colposcope.

II-47. Operating Light (Replacement): This project excludes the operating light, because the ceiling fixture has not enough strength to support the operating light. Instead, however, this project will procure two units of mobile operating light.

II-48. Operating Table (Replacement): The existing units of operating table have been used for more than 10 years and markedly deteriorated, and therefore, their further use cannot be expected. More than 2600 operations are carried out a year, meaning an average of about 5 operations per unit a day (2600 operations ÷ 250 days ÷ 2 units = 5.2 operations per unit per day). Thus, the cost-effectiveness for Operating Table is sufficiently high, which allows the preparation of two units of operating table in this project.

II-49. Electrosurgical Unit (Replenishment): The one existing unit is used exclusively in the operating rooms of gynecology. This project will procure an additional unit of electrosurgical unit, because it is difficult for the two operating rooms to share one unit according to the proposed plan on the function of the operating department in the Hospital.

II-50. Anesthesia Apparatus (Replacement): The two existing units of anesthesia apparatus, which were purchased about 10 years ago (in 1990 and 1991), have been used for longer than their service life and are deteriorated. Therefore, this Project will renew the two units of anesthesia apparatus.

II-51. Defibrillator (New Purchase): The Hospital is not equipped with a defibrillator at present. But, it is dispensable for the Hospital as a third class referral hospital of obstetrics and gynecology. Although this is the first introduction of this unit, there will be no major problems related to the management of its operation and maintenance. This project will procure one unit of defibrillator.

II-53. Binocular Microscope (Replacem./Replenish.): A monocle is used for laboratory tests at the Hospital, but it is worn-out and needs renewal. The Hospital conducts daily microscopic examination of more than 70 tests, consisting of about 20 tests of general examination (among about 40 in total), 20 to 25 tests of smear examination, and 30 to 40 tests of blood examination. This project will install two units of binocular microscope because these figures are expected to increase when the Hospital becomes incorporated with a regional hospital of obstetrics and gynecology in the future, and a single unit alone cannot cover a large number of tests.

II-54. Urine Analyzer (New Purchase): The Hospital desires a qualitative urine analyzer that facilitates visual observation of changes in color of test paper. However, the Hospital's current level of test order is 30 to 40 tests per day, and if increased, at most about 70 tests per day when the Hospital becomes incorporated with a regional hospital of obstetrics and gynecology in the future. Thus, the conventional visual examination may cover these tests. Another problem is the test paper. When the current stock of the test paper, which is donated by other institutions, is spent, the Hospital must purchase the test paper. But, it may be difficult for the Hospital to purchase the test paper because a sheet of the test paper costs about 35 soms (about ¥95). Accordingly, it is feared that, if a urine analyzer were installed, it can be useless because the test paper cannot be obtained.

A field survey shows that the major test items of urine examination at the Hospital are specific gravity, pH, protein, glucose, and urinary sediment. A refractometer will be procured for the tests of specific gravity; the biochemical analyzer will be used for the tests of both protein and glucose; and a microscope will be used for the tests of urinary sediment. Thus, this project excludes urine analyzer.

II-55. Ultrasound Scanner, Black and White (Replacement): The previous unit of ultrasound scanner (1998) that was formerly used at the Hospital is now transferred to the Polyclinic in Naryn, and the patients of the Hospital as well visit the Polyclinic for examination. The ultrasound scanner, the

only unit in Naryn, has been used for more than 10 years, and it is so worn-out that it may fail any time. The total number of tests of ultrasonography examination in 2001 was 4035, including 925 tests of pregnant women examination and 36 tests of mammary gland and thyroid gland examination. When the Hospital becomes equipped with a ultrasound scanner, it may be able to cover all of these tests, restoring one of the original functions of the Hospital. Hence, this project will install one unit of ultrasound scanner.

II-56. Biochemical Analyzer (New Purchase): Currently at the Hospital, 53 to 70 biochemical tests are carried out manually by using a spectroscope and test-kit reagents. The spectroscope, however, is not stable enough with a poor precision, and needs assistance from a nearby hospital for quality control several times a month. The installation of an automated biochemical analyzer will improve the examination precision and efficiency. It is also helpful that the laboratory test-kits used thus far can be used. Hence, this project will procure one unit of biochemical analyzer.

II-57. Centrifuge, Table-top Type (Replacement): The existing unit needs replacement because it is worn-out. A centrifuge is frequently used and indispensable for separation of serum from biochemical test specimens and for urinary sedimentation. In 2001, 130 to 120 specimens per day were centrifuged. This project will procure two units of centrifuge, because this figure is expected to increase when the Hospital becomes incorporated with a regional hospital of obstetrics and gynecology in the future.

II-58. Electrolyte Analyzer (New Purchase): This project excludes electrolyte analyzer. An electrolyte analyzer requires a certain cost for maintenance irrespective of the frequency of requested tests, and the cost-effectiveness decreases if the requested tests become less than several tens per day. Monthly reagent expenses will be about 11,000 soms (about ¥32,000), and annual maintenance cost including the replacement parts such as electrodes will be about 240,000 soms (about ¥708,000), whereas sufficient test requests will not be expected for the Hospital. Consequently, it will be difficult for the Hospital to maintain an electrolyte analyzer.

II-59. Blood Gas Analyzer (New Purchase): This project excludes blood gas analyzer. A blood gas analyzer requires a certain cost for maintenance irrespective of the frequency of requested tests, and the cost-effectiveness decreases if the requested tests become less than several tens per day (50 to 60 depending on each country). Monthly reagent expenses will be about 15,000 soms (about ¥43,000), and annual maintenance cost including the replacement parts such as electrodes will be about 340,000 soms (about ¥951,000), whereas sufficient test requests will not be expected for the Hospital. Consequently, it will be difficult for the Hospital to maintain a blood gas analyzer.

II-60. Coagulometer (New Purchase): Manual methods are currently used for blood clotting examination, and 10 to 15 tests per day are carried out. However, the number of requested tests is expected to increase when the Hospital becomes incorporated with a regional hospital of obstetrics and gynecology in the future. The installation of a semi-automated instrument for blood clotting

examination will minimize the spread in precision among laboratory workers and reduce the time required for examination. Furthermore, with a semi-automated instrument, examination processes become simple and its maintenance can be less problematic. Hence, this project will procure one unit of coagulometer.

II-61. Hematology Analyzer (New Purchase): The Hospital's current practice for counting of blood cells, such as leukocytes, erythrocytes, and platelets uses microscope observation after staining with an output of about 40 tests a day. This figure is expected to increase when the Hospital becomes incorporated with a regional hospital of obstetrics and gynecology in the future. The installation of a Hematology Analyzer will minimize the spread in observation results among laboratory workers and improve the examination efficiency. One unit of a model of Hematology Analyzer will be procured, which is simple in the principle of operation and of which maintenance does not require expertise.

II-62. Washing Machine (Replacement): The existing washing machines are worn-out and their further use cannot be expected. In the Hospital, about 300 kg of operating gowns and sheets are washed daily at present. Suppose that the daily working hours are 10 hours, eight in daytime and two at night, and the operation cycle of a washing machine is one hour; then, the possible number of washing machine operations is given by $10 \text{ h} \div 1 \text{ h/time} = 10$ times. In reality, however, 50% duty operation is preferable, and the practical number of washing machine operations is given by $10 \times 0.5 = 5$ times/day. Then, suppose a washing machine that has the washing capacity of 30 kg. The daily washing capacity per unit is given by $30 \text{ kg} \times 5 \text{ times} = 150 \text{ kg per day}$. Thus, it is concluded that 300 kg of washing materials per day can be cleaned by using two units of a washing machine having the capacity of 30 kg ($300 \text{ kg} \div 150 \text{ kg} = 2$).

II-69. Reanimation Bed (Replacement): The existing units need renewal because they are worn-out and do not function properly. This Project will procure three units of Reanimation Bed according to the requirement under the Kyrgyz side plan.

II-74. Delivery Table (Replacement): The existing units need renewal because they are worn-out. The number of delivery operations was about 2000 cases ($2000 \text{ cases} \div 365 \text{ days} = 6 \text{ cases per day}$) in 2001. This figure is expected to increase when the Hospital becomes incorporated with a regional hospital of obstetrics and gynecology in the future. One of the two units of Delivery Table currently in used in the objective facility is worn-out and will be renewed.

A summary of review on other items of the requested equipment is given below.

Table 2.3 Review on Other Items of Equipment Requested by Maternity House of Naryn Oblast Merged Hospital

No.	Description	Classification	Necessity/Relevance
II-1	Mobile Quartz Lamp	Replacement	Renew the four existing units of Lamp that are worn-out: two units in the two operating rooms and the other two in the two delivery rooms.
II-4	Weighing Scale, Infant	Replacement	Renew the five existing units that are worn-out: two units in the two delivery rooms, one in the ICU, one in the 1-F ward, and one in the 3-F ward.
II-8	Laryngoscope Set, Adult	Replacement	Renew the three existing units that are worn-out: two units in the operating rooms, and the other in the ICU.
II-9	Laryngoscope Set, Infant	Replacement	Renew the three existing units that are worn-out: one unit in the NICU, one in the delivery rooms, and one in the operating rooms.
II-12	Instrument Cabinet	Replacement	Renew the five existing units that are worn-out: two units in the operating rooms, two in the delivery rooms, and one in the gynecology treatment room.
II-13	Obstetric Instrument Set	Replacement	2000 deliveries per year x 1.8 = 3600; 3600 ÷ 250 days = 14 deliveries per day. Renew part (10 sets) of the existing sets.
II-18	Stethoscope	Replenishment	Procure 10 additional sets: one set for the reception consulting room, four sets for the 2-F obstetrics and gynecology, and five sets for the 3-F obstetrics and operating departments.
II-19	Instrument Table	Replacement	Procure five sets to replace the existing sets that are worn-out and insufficient in number for the operating rooms, the delivery rooms, and the NICU.
II-20	Sphygmomanometer	Replenishment	Procure 10 additional sets: one set for the reception consulting room, four sets for the 2-F obstetrics and gynecology, and five sets for the 3-F obstetrics and operating departments.
II-24	Reanimation Set, Adult	Replacement	Renew the three existing sets that are worn-out and do not function properly: one set in the ICU, and two in the two operating rooms.
II-31	Weighing Scale, Adult	Replacem./ Replenish.	Procure one set each for the reception consulting room, the 2-F gynecology, the 2-F obstetrics, and the 3-F obstetrics.
II-38	Instrument Tray	Replacem./ Replenish.	Procure 14 sets to replace the existing sets that are worn-out and insufficient in number.
II-39	Stretcher	Replacem./ Replenish.	Procure three sets to replace the existing sets that are worn-out and insufficient in number for the operating department, the ICU, and the delivery department.
II-41	Instrument Carriage	Replacement	Renew the four existing sets that are worn-out in the ICU, the 2-F gynecology, the 2-F obstetrics, and the 3-F obstetrics.
II-42	Cesarean Instrument Set	Replacement	Renew the two existing sets that are worn-out: one set for scheduled operations and the other set for emergency operations.

No.	Description	Classification	Necessity/Relevance
II-45	Minilaparotomy Instrument Set	Replacement	Renew the two existing sets that are worn-out: one set for inpatients and the other set for emergency patients.
II-46	Gynecological Instrument Set	Replacement	Renew the two existing sets that are worn-out: one set for scheduled operations and the other set for emergency operations.
II-52	pH Meter	New Purchase	Procure one set because this set is indispensable and, although this is the first introduction of this unit, there will be no major problems related to the management of its operation and maintenance.
II-64	Post-natal Curette Set	Replacement	Procure six sets because these sets can be cleaned and sterilized immediately after use and, therefore, six sets are enough.
II-66	Fetoscope	Replenishment	Excluded because this unit may be purchased by the Client's own efforts
II-68	Urine Catheter	Replacement	As above
II-70	Uterine Probe	Replacement	Renew the 16 existing sets that are worn-out in the reception consulting room, the 2-F gynecology, the 2-F obstetrics, and the 3-F obstetrics.
II-71	Operating Instrument Set	Replacement	Renew the three existing sets that are worn-out to allow three operations (scheduled, etc.) per day.
II-72	Minor Operating Instrument Set	Replacement	Procure three sets, for the three existing sets that are worn-out to allow three operations (scheduled, etc.) per day.
II-75	Delivery Instrument Set	Replacement	Procure five sets, for the five existing sets that are worn-out by taking into account that an average number of deliveries per day is about five.
II-76	Laboratory Instrument Set B	Replacement	Procure one set because the existing set is worn-out and incomplete, lacking the whole or part of some instruments.

3. Issyk-Kul Oblast Merged Hospital Obstetrics and Gynecology

III-1 Ventilator, Adult (Replacement): Two ventilators for adult used in the facility will be renewed because they have expired their service life and do not operate normally at present.

III-2-1 Patient Monitor (New Purchase): Although no patient monitor is used in the facility at present, this type of device is indispensable because the facility is the third-level state-funded hospital of obstetrics and gynecology, in which surgical operations are frequently performed on patients under general anesthesia. The Obstetrics and Gynecological departments, which are situated in different buildings, are their own operating rooms (two for each department), meaning at least two patient monitors are required. For this reason, in this plan, two new monitors are to be procured with no problem with operation and maintenance.

III-2-2 Bedside Monitor, Adult (New Purchase): This type of device is indispensable because the facility is the third-level referral obstetrics hospital. Any problem may be eliminated if only a full explanation of how to operate and maintain newly introduced devices is given to physicians and nurses. Two new bedside monitors, therefore, are to be procured according to the number of the ventilators (ventilators require the same number of bedside monitors as that of themselves).

III-7 Defibrillator (Replacem./Replenish.): A defibrillator being used in the facility (the ICU department) has far expired its service life and must be renewed. Another new device is to be procured for use by the Operating department because of the operating department being far from the ICU.

III-8-1 Medical Refrigerator (Replacement): At present, 12 medical refrigerators are used in the facility, almost all of which are deteriorated. In this plan, 6 out of 12 refrigerators are to be renewed and allocated to the Gynecological Operating, Obstetric Operating departments, the ICU, NICU, preventive vaccination, and blood transfusion rooms.

III-8-2: Freezer (Replacement): No special-purpose freezers are installed in the facility and the drugs including vaccine are resignedly stored in the freezers contained in the refrigerators. Apparently, this storage method is not recommended. In this plan, therefore, two freezers are to be procured; one for storing vaccine and the other for storing serum by the clinical laboratory.

III-9: Electrical Suction Unit (Replacem./Replenish.): All of six electrical suction units, which are deteriorated (ten or more years have passed since procurement and they have far expired their service lives), are used with repeated repairs. They are of small type 500 cc or 1000 cc. In this plan, 4 electrical suction units with capacity of about 3000 cc for each of four operating rooms and 6 units with about 1000 cc for the ICU, NICU, two delivery rooms, and the obstetric and gynecological wards are to be installed. Ten electrical suction units in total are planned to be procured .

III-10 Anesthesia Apparatus (Replacement): Six anesthesia apparatuses procured earlier than 1990, none of which operate normally, are used at present. The Obstetrics and Gynecological departments have their own large and small operating rooms. Assuming that any operations requiring general anesthesia are performed in the large operating rooms, one device is to be procured in each of them (one for the obstetric operating room and the other for gynecological operating room).

III-11 Operating Table (Replacement): The operating tables used in four operating rooms are worn-out considerably (procured during a period from 1978 to 1991) and it is not reasonable to continue using them for the future. In this plan, the existing operating tables are to be renewed.

III-12 Operating Light (Replacement): All of existing operating lights were procured earlier than 1991 and have expired their own service life. These lights are used with repeated repairs. With problems of worn-out and no availability of replacement valves, they do not function adequately, which is an obstacle to operations. At present, four pendant-operating lights are required to procure (one for each of four operating rooms), although three pendant lights are to be renewed because one obstetric operating room has no fittings necessary for securing the light.

III-13 Mobile Operating Light (Replacement): Three existing mobile operating lights are life-expired and no replacement valves are available, resulting in an obstacle to delivery and operations. In this plan, three mobile operating lights in total are to be replaced with new ones in two delivery rooms and one obstetric operating room.

III-18 Electrosurgical Unit (Replacement): The electrosurgical units procured during a period from 1980 to 1985 were disposed because of worn-out. Assuming that 12.52 operations/day is estimated from the statistical data of about 3,130 operations/year ($3,130 \div 250 \text{ days} = 12.52 \text{ operations/day}$) and three or four operations will be performed in each operating room a day ($12.52/\text{day} \div 4 \text{ rooms} = 3 \text{ to } 4 \text{ operations}$), electrosurgical units may be in high demand. In this plan, two electrosurgical units in total are to be procured in the large obstetric and gynecological operating rooms.

III-19 Hot Air Sterilizer, Large Size (Replacement):. They must be renewed, because two hot air sterilizers installed in the central material room were procured in 1980's and have expired their own service life

III-20 Hot Air Sterilizer, Medium Size (Replacement): They must be renewed, because two out of five existing hot air sterilizers were procured ten years ago or earlier (have expired their own service lives), they must be replaced with new ones.

III-21 Autoclave (Replacement): In the central material room of the facility, four autoclaves are installed; one being of horizontal type and three being of vertical type. It cannot be repaired because the horizontal autoclave is considerably deteriorated and damaged due to aging. The vertical autoclaves, which are used with repeated repairs, also have deteriorated and have possibility that an

accident may occur at any time. For this reason, they must be replaced with new ones as soon as possible.

In the material rooms of the facility Issyk-Kul, at present, 157 drums in total are used for sterilization everyday; 38 × 19 (h) cm (40 drums), 32 × 17 (h) cm (48 drums), and 15 × 15 (h) cm (69 drums). This means that sterilization capacity/day is 1.697 m³.

Assuming that an autoclave with capacity of 0.225 m³ is operated at a cycle of 50 minutes for seven hours a day, it may go through eight cycles a day. Practically, it is preferred that the autoclave operates at a 50 % level of full performance (four cycles/day). Accordingly, the performance of an autoclave/day can be obtained from the formula; 0.225 m³/cycle × 4 cycles/day = 0.9 m³/day × 2 units = 1.8 m³/day. As known from the result of the calculation, two autoclaves with capacity of about 225 L are required.

III-25 Washing Machine (Replacement): They must be renewed, because two existing machines are worn-out considerably and cannot be used at all. In the facility, about 440 kg of surgical gowns and bed sheets are washed everyday at present. Assuming that a washing machine with capacity of 30 kg is run at a cycle of one hour for eight hours at daytime and for two hours at nighttime, it may go through ten cycles (10 hours ÷ 1 hour/cycle = 10 cycles). Practically, it is preferred that the machine runs at a 50 % level of full performance (five cycles/day).

Accordingly, the performance of a washing machine can be obtained from the formula; 30 kg/cycle × 5 cycles/day = 150 kg/day. To wash 440 kg of gowns and sheets a day, three washing machines with capacity of 30 kg are required (440 kg ÷ 150 kg = 2.93).

III-26-1 Fetal Monitor (Replacem./Replenish.): It must be renewed, because an existing monitor is worn-out and cannot be used. For the facility, which is the third-level referral hospital of obstetrics and gynecology, fetal monitors are indispensable. For this reason, they must be procured in this plan. The delivery department of this facility includes two parts, one for emergency patients on the first floor and the other for programmed-delivery patients on the third floor. It is impossible for two delivery rooms on the first and third floors to share the same monitor and two monitors must be procured.

III-26-2 Fetal Doppler (Replacement): It must be renewed, because an existing fetal dopplers are worn-out considerably and cannot be used. Dopplers are indispensable to obstetric treatments. Three fetal dopplers in total must be procured, one in the programmed-delivery room, one in the emergency delivery room, and one in the pregnant ward.

III-27 Ultrasound Scanner, Black and White (New Purchase): Ultrasound scanners are indispensable especially to the third-level state-funded medical facility of obstetrics and gynecology. From the statistical data of 2,027 births in 2001, it may be estimated that ultrasonography must be

applied to ten or more cases everyday only for the obstetrics department. Two medical physicians have experiences in ultrasonography and it has been confirmed that a training course may be held at Bishkek. For this reason, in this plan, one scanner is to be procured because the introduction of a new ultrasound scanner may not cause any problem with operation and maintenance.

III-28 Colposcope (Replacement): The existing colposcope procured in 1972 is worn-out and cannot be used. The statistical research showed that colposcopic examination was applied to 742 cases in 1999 and 612 cases in 2001. One unit is to be procured in this plan, since colposcope is in high demand.

III 29-1 Electrocardiograph (Replacement): The electrocardiograph procured in 1980's is considerably worn-out and must be renewed. The number of cases examined was 182 in 2001. One unit is to be procured, because it may be predicted that the replacement with new one will increase the number of cases to be examined, in this project.

III-29-2 Eletrocardiograph, Portable (Replacement): The portable electrocardiograph procured in 1980's is worn-out considerably and cannot be used. One unit is to be procured in this plan, because the electrocardiograph is in high demand in the facility (the result from the statistical research for the facility showed that about 250 cases required electrocardiography annually),

III-30-1 Syringe Pump (Replacem./Replenish.): Two out of three syringe pumps procured in 1985 are worn-out and cannot be used. At present, only one pump is used with repeated repairs and it must be replaced with new one. In this plan, 5 syringe pumps in total are to be procured, 1 in the ICU room, two in the NICU room, one for the NICU infectious disease room, and one in the cancer ward of the gynecological department.

III-30-2 Infusion Pump (New Purchase): It is predicted that for the facility, which is the third-level state-funded hospital of obstetrics and gynecology, infusion pumps are requisite. New introduction of pumps causes no problems with operation and maintenance, therefore three units in total are to be procured, one in the ICU room, one in the gynecological ward, and one in the obstetric ward.

III-31 Electrical Suction Unit, Gyne-Obsteric (New Purchase): Suction units are used mainly for delivery, as well as for general vacuum extraction and premature abortion. In Kyrgyz, since suction units are not used for delivery, only units for premature abortion are required. In this plan, one suction unit is to be procured, which will not be exclusive for premature abortion but for general suction.

III-35 Infant Incubator (Replacement): Only one out of four infant incubators procured in 1996 operates normally at present. They are to be renewed in this plan because three units are worn-out considerably.

III-36 Infant Warmer (Replacement): At present, eight infant warmers are used. Four units procured in 1996 can continue to be used while the other four units are worn-out considerably and do not operate normally. In this plan, deteriorated four units are to be renewed.

III-37 Phototherapy Unit (Replacement): Six existing phototherapy units are considerably deteriorated and do not function adequately. In this plan, four units are to be renewed, 2 in the NICU room and 2 in the newborn baby room.

III-38 Ventilator, Infant (Replacement): Two out of three existing ventilators are worn-out and must be renewed. The remaining ventilator will be exclusively used for the NICU infectious disease room and the two replacements will be shared by four NICU rooms.

III-39 Bed (Replacement): They are not to be procured in this plan, because general-purpose beds may continue to be used,. Note that since three beds in the ICU room and gatch beds in the gynecological ward are worn-out and do not function adequately, seven gatch beds are to be procured in this project.

III-43 Ultrasonic Nebulizer (Replacement): At present, two simple-type nebulizers for four patients are used in the facility. In the country where it is extremely cold and atmosphere is dried up in winter, nebulizers are frequently used, although the number of units is insufficient. In this plan, four nebulizers are to be procured, two units in the obstetric ward and two in the gynecological ward.

III-46 Binocular Microscope (Replacem./Replenish.): An existing microscope is of monocular type and worn-out. To improve the accuracy and quality of tests, it is to be renewed. Bracae only one microscope is used at present, the laboratory technician works 12 hours or more everyday. To address this problem, two units are to be procured in this project

III-47 Biochemical Analyzer (New Purchase): At present, about 50 biochemical tests are manually conducted using reagent kits and spectrophotometers everyday in the facility. Mechanization of biochemical tests may not only decrease the amounts of reagents used for the tests, resulting in a reduction in the operating cost but also prevent any variation among subjects from occurring, increasing the accuracy and efficiency of tests. Since the existing analyzer can continue to be used and the route for purchasing reagents has been secured, one unit is to be additionally procured in this project

III-48 Centrifuge, Table-top Type (Replacement): Centrifuges are indispensable to biochemical and urinary sediment tests and frequently used. According to the statistical data in 2001, the centrifuge was used in about 50 biochemical tests and in about 420 general tests. Because of it being frequently used, the existing units, which have been used over ten years or more and worn-out, must be replaced with new ones. In this plan, three table-top centrifuges are to be renewed in the biochemical and general test rooms.

III-49 Coagulometer (New Purchase): At present, the blood-clotting test is manually conducted and 2,050 samples were tested in 2001. It is predicted that the procurement of a coagulometer may increase the samples to be handled requiring less time for testing. A semiautomatic coagulometer prevents any variation among subjects and problems with operation and maintenance from occurring because of its simple examination process.

III-50 Blood Gas Analyzer (New Purchase): To operate and maintain a blood gas analyzer, a certain amount of cost is required even if a few subjects are tested, while cost effectiveness is decreased if several tens of subjects (50-60 subjects depending on the country) are not tested. It is predicted that the demand for tests in the facility is not so high and it is impossible to operate the analyzer in the facility because the cost for reagents is about 15,000 soms (about 43,000 yens) per month and the total cost accounts about 340,000 soms (about 951,000 yens) per year including replacement parts (for example, electrodes). For this reason, a blood gas analyzer is to be excluded from this project.

III-51 Electrolyte Analyzer (New Purchase): To operate and maintain an electrolyte analyzer, a certain amount of cost is required even if a few subjects are tested, while cost effectiveness is decreased if several tens of subjects (50-60 subjects depending on the country) are not tested. It is predicted that the demand for tests in the facility is not so high and it is impossible to operate the analyzer in the facility because the cost for reagents is about 11,000 soms (about 32,000 yens) per month and the total cost accounts about 240,000 soms (about 708,000 yens) per year including replacement parts (for example, electrodes). For this reason, an electrolyte analyzer is to be excluded from this project.

III-52 Hematology Analyzer (New Purchase): At present, in counting blood cells such as leucocytes, red corpuscles and platelets, the leukocyte staining method is used under microscope in the facility. About 360 samples are tested everyday. It is predicted that the procurement of an analyzer may increase the number of samples to be handled. An analyzer can prevent any variation among the subjects and improve efficiency in tests. In this plan, one hematology analyzer, which is simple in measurement principle and may not cause any problems with operation and maintenance, is to be procured.

III-54 X-Ray Unit (Replacement): The existing x-ray units procured earlier than 1991 are life-expired. The unit for general x-ray photography is used with repeated repairs, while the unit for fluoroscopy is not used because of its unrecoverable failure. In 2000, x-ray photography was applied to 5,042 subjects (the number of films is 6,942), the mean value/day being about 20 (5,042 subjects ÷ 250 days = 20.2 subjects/day). According to 1999 statistical data, it was applied to 619 subjects. Thus, the x-ray units are in high demand in the facility and are to be renewed in this project.

III-56 Incubator (Replacement): In carrying out a bacteriological examination, a bacterium is cultured in an incubator where an appropriate environment for the bacterium has been established for one to three days. In the facility, 4,209 tests for gonococcus and filamentous bacterium as well as 28

tests for tubercle bacillus were conducted in 2001. Many of bacteria preferably grow at 37 °C, which is as almost the same level as that of body temperature, while some show a preference for higher or lower temperature. For this reason, two old incubators are to be renewed in this project.

III-57 Water Distiller (Replacement): Two existing water distillers are worn-out considerably and any failure occurs frequently in them. The old units are to be renewed in the central material room and the pharmacist's office in this project.

III-59 Urine Analyzer (New Purchase): 1,685 tests for protein in urine and glucose in urine as well as 87,388 general urine tests are manually conducted annually (2001). On the other hand, since the qualitative test is conducted on at most 8 samples ($1,685 \text{ samples} \div 250 \text{ days} = 6.74$), it may be possible that the conventional visual tests continue to be used with no problem. Note that to improve efficiency in general tests ($87,388 \text{ samples} \div 250 \text{ days} = 350 \text{ samples/day}$), a clinical refractor, biochemical analyzer, and microscope are to be procured but a urine analyzer is to be excluded from this project.

III-60 Hysteroscope, Flexible Type (New Purchase): A hysteroscope is requisite for the third-level oblast hospital of obstetrics and gynecology. This flexible type of hysteroscope may be introduced for the first time with no problem with operation and maintenance. According to the plan by the facility, if the hysteroscope is introduced, hysteroscopy may be applied to 100 or more subjects annually. Thus, one unit is to be procured in this project.

III-61 Ambulance Car (Replacement): The ambulance car used have been life-expired and disposed. At present, one jeep, in which no stretcher can be loaded because of its small size, is used for carrying emergency patients to the facility but this car, which was procured for the purpose of purchasing commodity, does not serve as an ambulance car. Thus, most of emergency patients are carried by personal car or taxi to the facility. One ambulance car is to be procured in this project.

III-64 Water Bath (Replacement): One water bath used in the Clinical Test department has expired its won service life (used over ten years or more). It is to be replaced with new one in this plan, because this unit is indispensable to the department.

A summary of review on other items of the requested equipment is given below.

Table 2.4 Review on Other Items of Equipment Requested by Maternity House of Issyk-Kul Oblast Merged Hospital

No.	Description	Classification	Necessity/Relevance
III-3	Reamination Set, Adult	Replacement	Renew the two existing sets that are worn-out and do not function properly. One set for the gynecological operating department and another for obstetric operating department.

No.	Discription	Classification	Necessity/Relevance
III-4	Reamination Set, Infant	Replacement	Renew the two existing sets that are worn-out and do not function properly. One set for the NICU and another for obstetric operating department.
III-5	Laryngoscope Set, Infant	Replacement	Renew the two existing sets for the NICU that are worn-out. One of them is exclusively used for the patients with infectious disease.
III-6	Laryngoscope Set, Adult	Replacement	Renew the two existing sets that are worn-out. One set for the gynecological operating department and another for obstetric operating department.
III-14	Operating Instrument Set	Replacement	Renew the two existing sets that are worn-out. One set for programmed-operations and another for emergency operations and others.
III-15-1	Gynecological Treat. Instrument Set	Replacement	On an average, about 12 patients are examined everyday. Some (ten sets) of existing sets are to be renewed.
III-15-2	Gynecological Instrument Set	Replacement	Renew the two existing sets that are worn-out. One set for programmed-operations and another for emergency operations and others.
III-16	Instrument Cabinet	Replacement	Renew the three existing cabinets that are worn-out. One set for each of ICU, gynecological operating department, and delivery rooms
III-17	Stretcher	Replacement	Renew the four existing sets that are worn-out. One set for each of the obstetric operating department, gynecological operating department, delivery, and ICU.
III-22	Drum, Large Size	Replenishment	Renew the 14 sets, because the number of drums is insufficient, being worn-out
III-23	Drum, Medium Size	Replenishment	Renew the 18 sets, because the number of drums is insufficient, being worn-out
III-24	Drum, Small Size	Replenishment	Renew the 18 sets, because the number of drums is insufficient, being worn-out
III-32	Stethoscope	Replenishment	Being insufficient, 14 units in total are to be added in the examination, delivery, operating, ICU, and NICU as well as the obstetric and gynecological wards.
III-33	Sphygmomanometer	Replenishment	The same as above
III-34	Weighing Scale, Infant	Replacement	Renew the two existing sets that are worn-out. One set for each of two delivery rooms and the NICU.
III-53	Fetoscope	Replacem./ Replenish.	Excluded because this unit may be purchased by the Kyrgyz size own efforts.
III-62	Small Operating Instrument set	Replacement	Renew the two existing sets that are worn-out. One set for the gynecological operating department and another for obstetric operating department.
III-63	Laboratory Instrument Set B	Replacem./ Replenish.	Procure one set because the existing set is worn-out and incomplete, lacking the whole or part of some instruments.

No.	Discription	Classification	Necessity/Relevance
III-65	Mobile Quartz Lamp	Replacement	Because existing quartz lamps do not adequately function, they are to be procured in four operating rooms.

4. Talas Oblast Merged Hospital Obstetrics and Gynecology

IV-1 Ambulance Car (Replacement): Number of calls of an ambulance car per day in the objective facility is about 7 (Obstetrics: 5; Gynecology: 2). An urgent patient from a village 120 to 140 km away was transported to this objective facility. The only one existing ambulance car goes faulty frequently because of aging and has trouble in transportation of a gynecological patient. Thus, the benefit of the ambulance car procured in this project is high.

IV-2 Amnioscope (New Purchase): Currently no amnioscopes are in use in the objective facility. As a result of study, necessity of this equipment is determined low and excluded from this project.

IV-3 Anesthesia Apparatus (Replenishment): Although a single unit of anesthesia apparatus is shared by two operation rooms in the existing facility, the two operation rooms in the new building where the gynecology department is to be moved are on separate floors (operation room of the gynecology department on the first floor; operation room of the obstetrics on the second floor). One new unit of anesthesia apparatus needs to be procured in this project.

IV-4 Electrical Suction, Gyne-Obstetric (New Purchase): A suction unit is primarily used for delivery, although it can be used for general suction and premature, artificial termination of pregnancy. However, in Kyrgyz, the use of suction unit for delivery is not common, and the facility needs the suction unit for premature termination of pregnancy. Hence, a gyne-obstetric suction unit will be procured in this project. However, this unit will not be exclusive for premature termination of pregnancy, but can be used for ordinary suction.

IV-5 Autoclave (Replacement): Two units of autoclave currently used in the objective facility have been used longer than their service life and need to be renewed early. Sterilization capacity of the objective facility is about the same as that of the Issyk-Kul Oblast Merged Hospital ((1.70m³). Two units of autoclave (around 225 L) will be procured.

IV-9-1 Patient Monitor (New Purchase): Patient monitor to be procured anew is essential equipment to the objective facility which is a third class hospital for obstetrics and gynecology. Operating rooms which belong to the obstetrics and gynecology departments are located on different floors in the new facility for the obstetrics and gynecology departments. Thus two units of patient monitor are required.

IV-9-2 Bedside Monitor, Adult (Replenishment): A simple unit of bedside monitor (no recording capability) procured several years ago has addressed about 20 patients a year (2000) in the objective hospital. Considering a case where the existing equipment has gone faulty (repair work on site takes time) and a case where two units of patient monitor are required at the same period, two units of bedside monitor will be procured for the obstetrics and gynecology departments. One unit of bedside monitor will be procured in this project.

IV-11 Binocular Microscope (Replacement/Replenishment): The existing equipment has worn out and has trouble in clinical inspection. The binocular microscope currently in use is not dedicated to the obstetrics and gynecology departments so that it cannot be moved to the obstetrics and gynecology departments in a new building. A total of 123,819 inspections were conducted in 2001 (approx. 400 inspections per day). At least two units of binocular microscope are required.

IV-12 Blood Gas Analyzer (New Purchase): As mentioned in the examination of equipment in other objective facilities, a budget exceeding 340,000 soms (about ¥951,000) per year is required to maintain blood gas analyzer. It is difficult to maintain this equipment in the objective obstetrics and gynecology departments so that the equipment is excluded.

IV-13-1 Centrifuge, Table-top Type (Replacement): This equipment is indispensable in separation of serum and urine sediment in biochemical inspection. While the centrifuge unit in the central inspection room is used for inspection, this unit is not dedicated to the obstetrics and gynecology departments so that it cannot be moved to the new facility. One unit of centrifuge will be procured in this project.

IV-13-2 Hematocrit Centrifuge (Replacement): Currently the hematocrit inspection is made using an ordinary centrifuge unit in the ICU room, so it is appropriate to procure a unit of hematocrit centrifuge in this project. The equipment procured in this project will be installed in the inspection room so that it may be shared by the obstetrics and gynecology departments.

IV-14 Gynecological Table (Replacement): The gynecological table used in the objective facility may be moved to a new facility and used there. Thus this equipment is excluded from the project.

IV-15 Coagulometer (New Purchase): Manual methods are currently used for about 5,300 blood clotting tests a year (2001). Procuring a semi-automatic coagulometer unit will prevent variations in accuracy between inspectors as well as reduce the inspection time. The planned equipment is a semi-automatic coagulometer and is simple equipment which is accompanied by no special maintenance problems. One unit of coagulometer will be procured.

IV-16 Colposcope (Replacement): Since the existing equipment is worn out and cannot be used, about 100 gynecological patients in the objective facility are referred to hospitals in Bishkek for inspection every year. If a unit of colposcope is procured, a total of 800 inspections are carried out a year. One unit of colposcope will be procured in this project.

IV-17 Defibrillator (Replacement): A defibrillator is less frequently used in a year in the objective facility, and the existing equipment can be still used. The defibrillator is excluded from this project.

IV-18 Diathermoscoagulator (New Purchase): The diathermoscoagulator is new equipment which is necessary for on-site gynecological treatment. In the Kyrgyz's plan, if this equipment is introduced, some 400 treatments will be carried out a year and the equipment has no special maintenance problems. One unit of diathermoscoagulator will be procured in this project.

IV-19 Water Distiller (Replacement): Since the existing equipment is worn out and is faulty so that it is difficult to use in a new facility of obstetrics and gynecology departments. One unit of water distiller will be procured in this project.

IV-21-1 Electrical Suction Unit, Large (Replacement): An worn-out electrical suction unit is currently shared by two operation rooms. This unit is difficult to be used in a new facility. Operation rooms of the obstetrics and gynecology departments are on separate floors in the new building accommodating the obstetrics and gynecology departments, two electrical suction units of a capacity of 3L will be required.

IV-21-2 Electrical Suction Unit, Small (Replacement): Currently three electrical suction units of small capacity are shared by the delivery room, NICU and ICU room but they are worn out and it is difficult to use them in a new facility. In this project, five units in total will be procured; two units for the delivery rooms (two), two units for NICU (two) and one unit for ICU room.

IV-22 Electrocardiograph (Replenishment): A unit of electrocardiograph (1-channel) procured for ICU is shared by the obstetrics and gynecology departments in the objective facility. The existing equipment will be dedicated to ICU as before and this project will procure one unit of 3-channel electrocardiograph for used across the facility.

IV-23 Electrosurgical Unit (Replacement): One electrosurgical unit shared by the operation room of the gynecology department and the operation room of the obstetrics department is already worn out and cannot be used. Since operation rooms of the obstetrics and gynecology departments are on separate floors in the new building accommodating the obstetrics and gynecology departments, two electrosurgical units will be required in this project.

IV-24 Gynecological Examination Unit (Replacement): The instrument tables and the examination lamps in use are worn out. Six gynecological examination units will be procured to the number of the instrument tables.

IV-25 Fetal Monitor (New Purchase): The objective facility is a third class referral hospital of obstetrics and gynecology, so that the fetal monitor is indispensable. Since delivery rooms are on separate floors (first floor and second floor) in the new building accommodating the obstetrics and gynecology departments, two fetal monitor units will be required.

IV-26 Gatch Bed (Replacement): The existing equipment is worn out and gatch is non-operating so that it must be renewed. Total eight units will be procured; two units for the recovery room of the gynecology department on the first floor of the new building accommodating the obstetrics and gynecology departments, one unit for the ICU of the obstetrics department, two units for the recovery room both on the first floor, and one unit for the ICU of the gynecology department, two units for the recovery room both on the second floor.

IV-27 Hematology Analyzer (New Purchase): Total 5,350 hemoglobin inspections, 5,344 erythrocyte inspections and 5,800 leucocyte inspections are made through manual method. Procuring a hematology analyzer unit will prevent variations in accuracy between inspectors as well as upgrade the inspection efficiency. Measurement principle of this equipment is simple to inspectors in the objective facility and no maintenance problems will be involved. One unit of hematology analyzer will be procured.

IV-28-1 Hot Air Sterilizer, Large (Replacement): Although a total of seven units of hot air sterilizer are used in the objective facility, all are worn out and need renewal. In this project, two units of hot air sterilizer of a large size (capacity: about 270 L) will be procured for sterilizing operating instruments (one for each operation department).

IV-28-2 Hot Air Sterilizer, Medium (Replacement): Six units of hot air sterilizers of a capacity of about 150 L will be procured; one for the gynecology treatment room, one for NICU and delivery room on the first floor respectively, and one for NICU and delivery room on the second floor respectively, and one shared by the obstetrics department.

IV-29 Hysteroscope (New Purchase): This equipment is necessary as a third class oblast hospital of obstetrics and gynecology. The hysteroscope (flexible type) is newly introduced and has no problems in terms of operation and maintenance. If this equipment is introduced in the Kyrgyz's plan, about 200 inspections/treatment will be carried out a year. This project will procure one unit of hysteroscope.

IV-31 Infant Incubator (Replacement): Five existing units are worn out and only two can be used. These two units were procured in 1990 and need to be renewed. The number of newborn babies who use infant incubator a year is about 265. $265 \times 5 \text{ days (average number of days a patient infant is in an incubator)} \div 365 \text{ days} +$ (one unit is considered as spare because some infants stay in infant incubator for over five days; equipment fault is also considered) $=4+1=5$ units will be required.

IV-32 Infant Warmer (Replacement): In a new building accommodating the obstetrics and gynecology departments, total seven units of infant warmers, two for each of two NICU rooms, one for each of two delivery rooms, and one for the examination/treatment room. Two out of the four existing units can be used. Therefore, this project will procure five units ($7-2=5$) of infant warmer.

IV-33 Infusion Pump (New Purchase): The objective facility is a third class oblast hospital of obstetrics and gynecology, so that the infusion pump is highly required. New purchase will involve no operation and maintenance problems. Two units, one for the gynecology department and one for the obstetrics department will be procured.

IV-34 Instrument Cabinet (Replacement): The existing equipment is worn out and is not appropriate for storing operating instruments. Total six units, two for two operation rooms, two for two delivery rooms and two for two NICU rooms, will be procured in this project.

IV-38 Electrolyte Analyzer (New Purchase): Same as other objective facilities, maintenance cost is high (at least 240,000 soms (about 708,000 yen) a year). It is difficult to maintain the electrolyte analyzer in the objective hospital. Thus the electrolyte analyzer is excluded from the project.

IV-41 Operating Light (Replacement): There is no hardware for attaching an operating light on the ceiling of a new building accommodating the obstetrics and gynecology departments. Thus the operating light pending from the ceiling will not be procured. As alternative equipment, one mobile operating light will be procured in each operation room.

IV-43 Ultrasonic Nebulizer (New Purchase): The existing equipment has been worn out and already disposed of. Since the ultrasound nebulizer is indispensable in the obstetrics and gynecology departments, total two units, one for the obstetrics department and one for the gynecology department, will be procured.

IV-44 Delivery Table (Replacement): Number of deliveries in 2001 is 1881 ($1881 \div 365 \text{ days} = 5.15/\text{day}$). Thus the delivery table is indispensable in the obstetrics and gynecology departments. The indispensable in the obstetrics and gynecology departments in the new facility has a delivery room with single delivery table (first floor) and a delivery room with two delivery tables (second floor). The existing equipment is worn out and can be hardly used in a new facility. This project will procure three units of delivery table.

IV-45 Mobile Operating Light (Replacement): The existing equipment is worn out and can be hardly used in a new facility accommodating the obstetrics and gynecology departments. Based on the plan of the new facility, it is necessary to procure total five units of mobile operating light, one for each of the two operation rooms and three for the delivery rooms.

IV-47 Phototherapy Unit (Replacement): One unit of the two existing units is worn out and faulty and cannot be repaired. The remaining unit has a problem that the procurement of replacement lamps is difficult. Thus, total two phototherapy units, one for each of the two NICU rooms in the new facility will be procured.

IV-51 Medical Refrigerator (Replacement): One unit among the three existing worn-out units is in use while repairs are made, but it will be difficult to use this unit in future. The number of the medical refrigerator units necessary in a new building accommodating the obstetrics and gynecology departments is determined by the arrangement of the operation rooms and delivery rooms. This project will procure total six medical refrigerator units, one for each of the gynecology department, delivery room and NICU on the first floor and one for each of the gynecology department, delivery room and NICU on the second floor.

IV-53 Biochemical Analyzer (Replacement): The number of inspections per day in the obstetrics and gynecology departments conducted in the central inspection department of the Talas Oblast Merged Hospital is about 60. It is impossible to move the equipment in the central inspection department not dedicated to the obstetrics and gynecology departments to the same department in the new facility. It is necessary to procure a biochemical analyzer unit in this project.

IV-60 Syringe Pump (Replacement/Replenishment): Two existing units of syringe pump are worn out and can be hardly used in a new facility accommodating the obstetrics and gynecology departments. This project will procure total three units, two for the two NICU rooms and one for the ICU room.

IV-61 Operating Table (Replacement): The existing equipment is worn out and can be hardly used in a new facility accommodating the obstetrics and gynecology departments. Operating tables in the operation room of the gynecology department and the operation room of the obstetrics department will be renewed.

IV-62 Incubator (Replenishment): According to the Kyrgyz's plan, inspection using an incubator unit required in the obstetrics and gynecology departments will be conducted in the central inspection room of the current oblast merged hospital as before. Thus the incubator is excluded from the project.

IV-63 Urine Analyzer (New Purchase): Quantitative inspections made per day in the obstetrics and gynecology departments are not numerous so that visual inspection may be continued without problems. The urine analyzer is excluded from the project.

IV-64 Ultrasound Scanner, Black and White (Replacement): The ultrasonic inspection necessary in the obstetrics and gynecology departments is executed in the central inspection department of the oblast merged hospital. The ultrasonic scanner used in the central inspection department is second-hand equipment given by another country a few years ago and does not function to full extent (the transvaginal probe important in the obstetrics and gynecology is not operating at all). The ultrasonic scanner used in the central inspection department is not dedicated to the obstetrics and gynecology departments so that it cannot be moved to a new facility accommodating the obstetrics and gynecology departments. It is thus necessary to procure an ultrasound scanner unit

in this project.

IV-65 Ventilator, Adult (Replacement /Replenishment): One existing unit was procured in 1972 and does not function to full extent. This project will procure total two units, one for the gynecology department and one for the obstetrics department.

IV-66 Ventilator, Infant (Replacement /Replenishment): One existing unit does not function to full extent because of wearing . This project will procure total two units; one for the gynecology department and one for the obstetrics department.

IV-67 Washing Machine (Replenishment): When the obstetrics and gynecology departments are moved to a new facility, a washing machine unit in the central laundry will be shared. The volume of laundry including operation suit and sheets in a day in the obstetrics and gynecology departments is about 300 kg, which requires two washing machine units. Three washing machine units in the central laundry already procured by Kyrgyz can be shared although they are of a small size. Thus one washing machine unit will be procured in this project.

IV-69 General X-Ray Unit (Replacement): Patients of the obstetrics and gynecology departments currently undergo X-ray photography in the central care ward of the oblast merged hospital. The number of X-ray photography cases of the obstetrics and gynecology patients is 717 in 2001, about three a day, and X-ray unit is indispensable. A building for X-ray photography is already constructed in the neighborhood of the new building accommodating the obstetrics and gynecology departments (X-ray protection work will start soon). The project will procure one X-ray unit.

IV-71 Fatal Doppler (New Purchase): This equipment is newly procured. If full explanation is made to doctors on the operation of the unit at procurement, thee will be no problems with operation and maintenance. In this project, total three units, one for the labor room on the first floor, one for the labor room on the second floor, and one for the reception/consultation room.

A summary of review on other items of the requested equipment is given below.

Table 2.5 Review on Other Items of Equipment Requested by Maternity House of Talas Oblast Merged Hospital

No.	Description	Classification	Necessity/Relevance
IV-7	Mobile Quartz Lamp	Replacement	Existing equipment is worn out. Total six mobile Quartz lamp units will be procured; two units for the gynecology department and four units for the obstetrics department.
IV-8	Bed	Replacement	The beds currently in use can be used in future also. Excluded from the project.
IV-10	Bedside Table	Replacement	Determined to be procured by the efforts on the Kyrgyz side. Excluded from the project.

No.	Description	Classification	Necessity/Relevance
IV-20	Weighing Scale, Adult	Replacement	Existing equipment is worn out and is to be renewed. Total three weighing scales will be procured; one for each of the reception room, obstetrics department and gynecology department.
IV-30	Basinet	Replacement	According to the Kyrgyz's plan, a baby sleeps on the same bed as the mother's. Excluded from the project.
IV-35	Cesarian Instrument Set	Replacement	Existing equipment is worn out. Two sets will be procured.
IV-36	Operating Instrument Set	Replacement	Existing equipment is worn out. Two sets will be renewed in this project.
IV-37	Instrument Table	Replacement	Existing equipment is worn out. Total six units of instrument table, two for operation rooms, two for delivery rooms, and two for NICU rooms, will be procured.
IV-39	Laryngoscope Set, Adult	Replacement	Existing equipment is worn out and will be renewed. Total three units will be procured; one for each of the two operation rooms and one for ICU.
IV-40	Laryngoscope Set, Infant	Replacement	Existing equipment is worn out and will be renewed. One for each of the two operation rooms and one for each of the two NICU rooms will be procured.
IV-42	Minilaparotomy Set	Replacement	Existing equipment is worn out and one set will be procured in this project.
IV-46	Fetoscope	Replacement	Available on site and determined to be procured by the efforts on the Kyrgyz side. Excluded from the project.
IV-48	Physiotherapy Set	New Purchase	This equipment is not used in the Japanese obstetrics and gynecology departments. Excluded from the project.
IV-49	Post-natal Curette Set	Replacement	Existing equipment is worn out and will be renewed. Total five sets will be procured; two for the gynecology department and three for the obstetrics department.
IV-50	Reanimation Set, Adult	Replacement	Existing equipment is worn out and not function to full extent. Two sets will be renewed.
IV-54	Minor Operating Instrument Set	Replacement	Existing equipment is worn out. Five operating instrument sets will be renewed.
IV-55	Gynecological Instrument Set	Replacement	Although five sets are required a day, three existing sets can be used in future also, so that two sets will be procured.
IV-56	Sphygmomanometer	Replenishment	Existing equipment is worn out and the number of sphygmomanometers is lacking. Total ten units will be procured.
IV-57	Stethoscope	Replenishment	As above
IV-58	Stretcher	Replacement	Two existing units are worn out and does not function to full extent. Total two units will be procured in this project; one for the gynecology department and one for the obstetrics department.

No.	Description	Classification	Necessity/Relevance
IV-59	Suction Unit, Pedal type	Replacement	One existing unit is available. A pedal-type suction unit is rarely used. Excluded from the project.
IV-68	Weighing Scale, Infant	Replacement	Total six weighing scales for infants will be required in a new objective facility. The two existing scales can be used in future also. Total four units will be procured.
IV-70	Wheel Chair	Replacement/ Replenishment	Currently used wheelchair is worn out and will be renewed. Total two units will be procured; one for the delivery room on the first floor and one for the delivery room on the second floor.
IV-72	Boiling Sterilizer	Replacement	This equipment is indispensable in the local objective facility. Total four boiling sterilizers will be procured; two for operation room and two for delivery rooms.
IV-73	Delivery Instrument Set	Replacement	Although five sets are required, three existing sets can be used in future also, so that two sets will be procured in this project.
IV-74	Film Developing Machine	Replenishment	Indispensable for developing films shot by a general X-ray unit.
IV-75	X-Ray Instrument Set	Replenishment	Includes darkroom lights and X-ray protection apron. Indispensable for procuring a general X-ray unit in the project.
IV-76-1	Film Illuminator A	Replenishment	Indispensable for checking films shot by a general X-ray unit. One unit will be procured.
IV-76-2	Film Illuminator B	Replacement	Necessary for continued shooting of films. One unit will be procured for the gynecology department and obstetrics department, respectively.
IV-77	Drum, Large size	Replenishment	34 units (17 times x 2 units/sterilization=34) will be procured to enable 17 times of sterilization using drums 360 mm in dia. and 240 mm in height.
IV-78	Drum, Medium size	Replenishment	36 units (6 times x 6 units/sterilization=36) will be procured to enable 6 times of sterilization using drums 270 mm in dia. and 180 mm in height.
IV-79	Drum, Small size	Replenishment	27 units (3 times x 9 units/sterilization=27) will be procured to enable three times of sterilization using drums 180 mm in dia. and 120 mm in height.
IV-80	Laboratory Instrument Set B	Replenishment	The instrument currently in use is not dedicated to the obstetrics and gynecology departments. New laboratory instrument sets B will be procured for the obstetrics and gynecology departments in the new facility.

(2) Criteria for Selection of Items of Equipment

The criteria for selection of the equipment to be procured is as follows:

1) Priority for selection

1. Equipment to be used for obstetrics and gynecology medical treatment or closely related with the obstetrics and gynecology.
2. Equipment to be requiring immediately replacement due to excessive deterioration.
3. Equipment with high cost-effectiveness.
4. Equipment with minimal operation and maintenance expenses.

2) Undesirable characteristics referred to in equipment selection

1. Expensive equipment not related directly to the improvement of mother and child medical care
2. Equipment placing large burdens on the Kyrgyz health budgets due to excessive maintenance and operating costs.
3. Equipment with problems relating to the procurement of spare parts, consumables and reagent.
4. Equipment requiring large changes in infrastructure.
5. Equipment with high probabilities of causing environmental damage.
6. Equipment for research only

The requested equipment has been evaluated and placed in the following categories using the criteria mentioned above. The examination results are shown from table __-__ to table __-__.

A. Classification of equipment

1. Renew: Renewal of existing equipment
2. Replenishment: The Replenishment of an number of existing equipment. (Only the renew is displayed at the renewal and replenishment)
3. New: The equipment procured is new.

B. Evaluation item

[1] Relationship with obstetrics and gynecology medical care.

- Indispensable equipment to obstetrics and gynecology medical care
- Basic equipment used in the hospital to support obstetrics and gynecology medical care.

[2] Evaluation of necessity

- Equipment with a high necessity and procurement required under this project.

- Equipment able to be procured by Kyrgyz the side.

- × - Equipment with low necessity, low cost-effectiveness or used in research only.

[3] Examination on technological level

- Equipment able to be used with the present technical level of medical staff.

- Equipment able to be used with the present technical level of medical staff and requiring extra training at the time of procurement.

[4] Examination of the operating and maintenance system

- Equipment causing no particular problem for the present system and budget to operate and maintain in the objective facilities.

- Equipment entailing comparatively high cost to operate and maintain, though able to be judged to manage by good management in objective facilities.

- × - Equipment requiring high costs to operate and maintain and /or hard to manage.

C. Overall Evaluation

- Equipment judged to be procured under this project

- × - Equipment judged to be excluded from this project.

Table 2.6 Result of Examination of Request Equipment – Human Reproduction Center

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				{ 1 }	{ 2 }	{ 3 }	{ 4 }			
I-1	X-Ray Unit	1	New purchase						1	
I-2	Mammography	1	New purchase						1	
I-3	Film Developing Machine	1	New purchase						1	
I-4	X-Ray Instrument Set	1	New purchase						1	
I-5	Ultrasound Scanner, Color Doppler	1	New purchase						1	
I-6	Ultrasound Scanner, Black and White	1	Replacem.						1	
I-7	Electrocardiograph	1	Replacem.						1	
I-8	Anesthesia Apparatus	2	Replacem.						2	
I-9	Cystoscope	1	New purchase						1	
I-10	Hysteroscope	1	Replacem.					×	0	Refer to "Examination of the Details of the Request"
I-11	Hystero-Resectoscope	1	New purchase						1	
I-12	Laparoscope	1	Replacem.						1	
I-13	Paraphormalin Sterilizer	1	Replacem.						1	
I-14	Cleaning Accessories Set	1	Replacem.						1	
I-15	Elctrosurgical Unit	3	New purchase						2	Q'ty refer to "Examination of the Details of the Request"
I-16	Plastic Surgery Set, Gynecology	1	Replacem.						1	
I-17	Operating Table	3	Replacem.						3	
I-18	Operating Light	3	Replacem.						2	Q'ty refer to "Examination of the Details of the Request"
I-19	Mobile Operating Light	4	Replacem.						4	

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				{ 1 }	{ 2 }	{ 3 }	{ 4 }			
I-20	Electrical Suction Unit, Large Size	2	Replacem.						3	Q'ty refer to "Examination of the Details of the Request"
I-21	Electrical Suction Unit, Small Size	3	Replacem.						2	Idem
I-23	Mobile Quartz Lamp	10	Replacem.						5	Idem
I-24	Operating Instrument Set	5	Replacem.						5	
I-26	Hot Air Sterilizer	4	Replacem.						4	
I-27	Fetal Monitor	2	New purchase						2	
I-28	Infant Incubator	6	New purchase						6	
I-29	Weighing Scale, Infant	5	New purchase						5	
I-30	Electrical Suction Unit, Gyne-Obstetric	2	New purchase						1	Q'ty refer to "Examination of the Details of the Request"
I-31	Infant Warmer	11	New purchase						8	Idem
I-32	Reanimation Set, Infant	10	New purchase						3	Idem
I-33	Reanimation Set, Adult	3	Replacem.						3	
I-34	Delivery Table	3	New purchase						2	Q'ty refer to "Examination of the Details of the Request"
I-35	Obstetric Instrument Set	6	New purchase						6	
I-36	Basinet	20	New purchase					×	0	Refer to "Examination of the Details of the Request"
I-37	Defibrillator	1	New purchase						1	
I-38-1	Patient Monitor	3	New purchase						3	
I-38-2	Bedside Monitor, Adult	5	Replenish.						4	Q'ty refer to "Examination of the Details of the Request"
I-39-1	Bedside Monitor, Infant	2	New purchase						2	
I-39-2	Pulse Oximeter, Infant	4	New purchase						4	

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				{ 1 }	{ 2 }	{ 3 }	{ 4 }			
I-40	Ventilator, Adult	2	New purchase						2	
I-41	Blood Gas Analyzer	1	New purchase						1	Refer to "Examination of the Details of the Request"
I-42	Infusion Pump	18	New purchase						5	Q'ty refer to "Examination of the Details of the Request"
I-43	Medical Refrigerator	5	Replacem.						5	
I-44	Colposcope	1	Replacem.						1	
I-45	Fluorescent Microscope	1	Replacem.						1	
I-47	Incubator	2	Replacem.						2	
I-48	Analytical Balance	1	Replacem.						2	
I-49	PH Meter	2	Replacem.						1	Q'ty refer to "Examination of the Details of the Request"
I-50	Ultra Low Temp. Freezer, Large	1	New purchase		×			×	0	Refer to "Examination of the Details of the Request"
I-51	Ultra Low Temp. Freezer, Small	1	New purchase						1	Idem
I-52	Fetoscope	1	New purchase		×			×	0	Idem
I-53	Diathermocoagulator	1	New purchase						1	
I-54	Cryodestructor	1	New purchase						1	
I-55-1	Gynecological Instrument Set	1	Replacem.						1	
I-55-2	Gynecological Diagnostic Instrument Set	1	Replacem.						1	
I-55-3	Cesarian Instrument Set	2	New purchase						2	
I-56	Drum, Large Size	35	Replacem.						34	Q'ty refer to "Examination of the Details of the Request"
I-57	Drum, Medium Size	35	Replacem.						36	Idem
I-58	Drum, Small Size	30	Replacem.						27	Idem

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				{ 1 }	{ 2 }	{ 3 }	{ 4 }			
I-59	Stand for Drum	50	New purchase					×	0	Refer to "Examination of the Details of the Request"
I-60	Boiling Sterilizer	4	Replacem.						4	
I-61	Laryngoscope Set, Adult	10	Replacem.						5	Q'ty refer to "Examination of the Details of the Request"
I-62	Instrument Table	16	Replacem.						10	Idem
I-63	Hematology Analyzer	1	New purchase						1	
I-64	Biochemical Analyzer	1	New purchase						1	
I-65	Immune Enzyme Analyzer	1	New purchase						1	Refer to "Examination of the Details of the Request"
I-66	Bacteriological Analyzer	1	New purchase						1	Idem
I-67	Binocular Microscope	2	Replacem.						2	
I-68-1	Centrifuge, Table-top Type	1	Replacem.						1	
I-68-2	Centrifuge, Refrigerated	1	New purchase						1	Refer to "Examination of the Details of the Request"
I-69	Coagulometer	1	New purchase						1	Idem
I-71	Urine Analyzer	1	New purchase				×	×	0	Idem
I-72	Water Distill	1	Replacem.						1	
I-78	Autoclave	2	Replacem.						2	
I-79	Washing Machine	3	Replacem.						2	
I-83	Chorion Biopsy Forceps	4	Replacem.					×	0	Refer to "Examination of the Details of the Request"
I-84	Surgical Scrub Station	2	Replacem.						2	
I-85	Stretcher	4	Replacem.						4	
I-88	Gatch Bed	8	Replacem.						8	

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				{ 1 }	{ 2 }	{ 3 }	{ 4 }			
I-90	Metal Basin	20	Replac em.					×	0	Refer to "Examination of the Details of the Request"
I-91	Medical Chair	6	Replac em.					×	0	Idem
I-92	Maintenance Tool	1	New purchase		×	×		×	0	Idem
I-93	Fetal Doppler	6	New purchase						3	
I-94-1	Gynecological Table	5	Replac em.					×	0	Refer to "Examination of the Details of the Request"
I-94-2	Gynecological Examination Unit	5	Replac em.						5	
I-95	Phototherapy Unit	4	New purchase						4	
I-96	Film Illuminator	8	New purchase						5	Refer to "Examination of the Details of the Request"
I-97	Ventilator, Infant	2	New purchase						2	
I-98	X-Ray Densitometer	1	New purchase		×			×	0	Refer to "Examination of the Details of the Request"
I-99	Weighing Scale, Adult	6	Replac em.					×	0	Idem
I-100	Syringe Pump	10	New purchase						8	Q'ty refer to "Examination of the Details of the Request"
I-101	Dionizator	1	New purchase				×	×	0	Refer to "Examination of the Details of the Request"
I-102	Height Scale	2	Replac em.					×	0	Idem
I-103	Laboratory Instrument Set	4	Replac em.						1	
I-104	Laminar	2	Replac em.						1	
I-105	CO2 Incubator	2	New purchase		×			×	0	Refer to "Examination of the Details of the Request"
I-106	Freezer	1	New purchase						1	
I-107	Vortex Mixer	1	New purchase					×	0	Refer to "Examination of the Details of the Request"
I-108	Shaker Incubator	1	New purchase						1	

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
I-109	Examination Lamp	5	Replacem.		×			×	0	Refer to "Examination of the Details of the Request"

Table 2.7 Result of Examination of Request Equipment – Maternity House of Naryn O. H.

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
II-1	Mobile Quartz Lamp	4	Replacem.						4	
II-2	Fetal Monitor	2	New purchase						1	Q'ty refer to "Examination of the Details of the Request"
II-3	Fetal Doppler	4	New purchase						3	Idem
II-4	Weighing Scale, Infant	10	Replacem.						5	Idem
II-5	Hot Air Sterilizer, Large Size	1	Replacem.						1	
II-6	Hot Air Sterilizer, Meium Size	4	Replacem.						4	
II-7	Electrical Suction Unit, Gyne-Obstetric	3	Replacem.						1	Q'ty refer to "Examination of the Details of the Request"
II-8	Laryngoscope Set, Adult	5	Replacem.						3	Idem
II-9	Laryngoscope Set, Infant	5	Replacem.						3	Q'ty refer to "Examination of the Details of the Request"
II-10	Infant Incubator	5	Replacem.						3	Idem
II-11	Infant Warmer	4	Replacem.						3	Idem
II-12	Instrument Cabinet	5	Replacem.						5	
II-13	Obstetric Instrument Set	10	Replacem.						10	
II-14	Mobile Operating Light	5	Replacem.						4	Q'ty refer to "Examination of the Details of the Request"
II-15	Electrical Suction Unit, Large Size	5	Replacem.						2	Idem
II-16	Electrical Suction Unit, Small Size	3	Replacem.						4	Idem

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
II-17	Suction Unit, Pedal Type	3	Replac em.						3	
II-18	Stethoscope	14	Replac em.						11	Q'ty refer to "Examination of the Details of the Request"
II-19	Instrument Table	5	Replac em.						5	
II-20	Sphygmomanomter	14	Replac em.						11	Q'ty refer to "Examination of the Details of the Request"
II-21	Ventilator, Adult	1	Replac em.						1	
II-22	Ventilator, Infant	1	Replen ish.						1	
II-23	Infusion Pump	3	New purcha se						2	Q'ty refer to "Examination of the Details of the Request"
II-24	Reanimation Set, Adult	3	Replac em.						3	
II-25	Bedside Monitor, Adult	3	Replac em.						2	Q'ty refer to "Examination of the Details of the Request"
II-26	Gatch Bed	4	Replac em.						4	
II-27	Syringe Pump	3	Replac em.						3	
II-28	Phototherapy Unit	1	Replac em.						1	
II-29	Gynecological Table	8	Replac em.					×	0	Refer to "Examination of the Details of the Request"
II-30	Gynecological Examination Unit	8	Replac em.						4	Q'ty refer to "Examination of the Details of the Request"
II-31	Weighing Scale, Adult	10	Replac em.						4	Idem
II-32	Medical Refrigerator	4	Replac em.						4	
II-35	Autoclave	2	Replac em.						2	
II-36	Patient Monitor	2	New purcha se						2	
II-37	Electrocardiograph	2	Replen ish.						2	
II-38	Intrument Tray	20	Replac em.						14	Q'ty refer to "Examination of the Details of the Request"

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				{ 1 }	{ 2 }	{ 3 }	{ 4 }			
II-39	Stretcher	3	Replacem.						3	
II-40	Ultrasonic Nabilizer	4	New purchase						4	
II-41	Instrument Carriage	5	Replacem.						4	Q'ty refer to "Examination of the Details of the Request"
II-42	Cesarian Instrument Set	2	Replacem.						2	
II-44	Colposcope	1	Replacem.						1	
II-45	Minilaparotomy Set	2	Replacem.						2	
II-46	Gynecological Instrument Set	3	Replacem.						2	Q'ty refer to "Examination of the Details of the Request"
II-47	Operating Light	2	Replacem.					×	0	Refer to "Examination of the Details of the Request"
II-48	Operating Table	2	Replacem.						2	
II-49	Electrosurgical Unit	1	Replenish.						1	
II-50	Anesthesia Apparatus	2	Replacem.						2	
II-51	Defibrillator	1	New purchase						1	
II-52	pH Meter	1	New purchase						1	
II-53	Binocular Microscope	2	Replacem.						2	
II-54	Urine Analyzer	1	New purchase				×	×	0	Refer to "Examination of the Details of the Request"
II-55	Ultrasound Scanner, Black and White	1	Replacem.						1	
II-56	Biochemical Analyzer	1	New purchase						1	
II-57	Centrifuge, Table-top Type	2	Replacem.						2	
II-58	Electrolyte Analyzer	1	New purchase				×	×	0	Refer to "Examination of the Details of the Request"
II-59	Blood Gas Analyzer	1	New purchase				×	×	0	Idem

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
II-60	Coagulometer	1	New purchase						1	
II-61	Hematology Analyzer	1	New purchase						1	
II-62	Washing Machine	2	Replacem.						2	
II-64	Post-natal Curette Set	20	Replacem.						6	Q'ty refer to "Examination of the Details of the Request"
II-66	Fetoscope	10	Replenish.					×	0	Refer to "Examination of the Details of the Request"
II-68	Urine Catheter	10	Replacem.					×	0	Idem
II-69	Reanimation Bed	6	Replacem.						3	Q'ty refer to "Examination of the Details of the Request"
II-70	Uterine Probe	30	Replacem.						16	Idem
II-71	Operating Instrument Set	3	Replacem.						3	
II-72	Minor Operating Instrument Set	5	Replacem.						3	Q'ty refer to "Examination of the Details of the Request"
II-74	Delivery Table	2	Replacem.						1	Idem
II-75	Delivery Instrument Set	5	Replacem.						5	
II-76	Laboratory Instrument Set	1	Replacem.						1	

Table 2.8 Result of Examination of Request Equipment – Maternity House of Issy-kul O. H.

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
III-1	Ventilator Adult	2	Replacem.						2	
III-2-1	Patient Monitor	2	New purchase						2	
III-2-2	Bedside Monitor, Adult	3	New purchase						2	Q'ty refer to "Examination of the Details of the Request"
III-3	Reanimation Set, Adult	2	Replacem.						2	
III-4	Reanimation Set, Infant	2	Replacem.						2	

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
III-5	Laryngoscope Set, Infant	2	Replac em.						2	
III-6	Laryngoscope Set, Adult	2	Replac em.						2	
III-7	Defibrillator	2	Replac em.						2	
III-8-1	Medical Refrigerator	6	Replac em.						6	
III-8-2	Freezer	2	Replac em.						2	
III-9	Electrical Suction Unit	12	Replac em.						10	Q'ty refer to "Examination of the Details of the Request"
III-10	Anesthesia Apparatus	4	Replac em.						2	Idem
III-11	Operating Table	4	Replac em.						4	
III-12	Operating Light	4	Replac em.						3	Q'ty refer to "Examination of the Details of the Request"
III-13	Mobile Operating Light	2	Replac em.						3	Idem
III-14	Operating Instrument Set	2	Replac em.						2	
III-15-1	Gynecological Instrument Set	10	Replac em.						10	
III-15-2	Gynecological Operating Instrument Set	2	Replac em.						2	
III-16	Instrument Cabinet	3	Replac em.						3	
III-17	Stretcher	4	Replac em.						4	
III-18	Electrosurgical Unit	4	Replac em.						2	Q'ty refer to "Examination of the Details of the Request"
III-19	Hot Air Sterilizer, Large Size	2	Replac em.						2	
III-20	Hot Air Sterilizer, Medium Size	2	Replac em.						2	
III-21	Autoclave	2	Replac em.						2	
III-22	Drum, Large Size	15	Replenis h.						14	Q'ty refer to "Examination of the Details of the Request"

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
III-23	Drum, Medium Size	15	Replenish.						18	Idem
III-24	Drum, Small Size	15	Replenish.						18	Idem
III-25	Washing Machine	2	Replacement.						3	Idem
III-26-1	Fetal Monitor	2	Replacement.						2	Idem
III-26-1	Fetal Doppler	1	Replacement.						3	Idem
III-27	Ultrasound Scanner, Black and White	1	New purchase						1	
III-28	Colposcope	1	Replacement.						1	
III-29-1	Electrocardiograph	1	Replacement.						1	
III-29-2	Electrocardiograph, Portable	1	Replacement.						1	
III-30-1	Syringe Pump	10	Replacement.						5	Q'ty refer to "Examination of the Details of the Request"
III-30-2	Infusion Pump	5	New purchase						3	Idem
III-31	Electrical Suction Unit, Gyne-Obstetric	1	New purchase						1	
III-32	Stethoscope	40	Replenish.						14	Q'ty refer to "Examination of the Details of the Request"
III-33	Sphygmomanometer	40	Replenish.						14	Idem
III-34	Weighing Scale, Infant	3	Replacement.						3	
III-35	Infant Incubator	3	Replacement.						3	
III-36	Infant Warmer	4	Replacement.						4	
III-37	Phototherapy Unit	4	Replacement.						4	
III-38	Ventilator, Infant	2	Replacement.						2	
III-39	Bed	20	Replacement.						7	Q'ty refer to "Examination of the Details of the Request"

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
III-43	Ultrasonic Nebulizer	5	Replacement.						4	Idem
III-46	Binocular Microscope	2	Replacement.						2	
III-47	Biochemical Analyzer	1	New purchase						1	
III-48	Centrifuge, Table-top Type	5	Replacement.						3	Q'ty refer to "Examination of the Details of the Request"
III-49	Coagulometer	1	New purchase						1	
III-50	Blood Gas Analyzer	1	New purchase				×	×	0	Refer to "Examination of the Details of the Request"
III-51	Electrolyte Analyzer	1	New purchase				×	×	0	Idem
III-52	Hematology Analyzer	1	New purchase						1	
III-53	Fetoscope	10	Replacement.				×	×	0	Refer to "Examination of the Details of the Request"
III-54	X-Ray Unit	1	Replacement.						1	
III-56	Incubator	2	Replacement.						2	
III-57	Water Distiller	4	Replacement.						2	Q'ty refer to "Examination of the Details of the Request"
III-59	Urine Analyzer	1	New purchase				×	×	0	Refer to "Examination of the Details of the Request"
III-60	Hysteroscope, Flexible Type	1	New purchase						1	
III-61	Ambulance Car	1	Replacement.						1	
III-62	Minor Operating Instrument Set	2	Replacement.						2	
III-63	Laboratory Instrument Set	1	Replacement.						1	
III-64	Water Bath	1	Replacement.						1	
III-65	Mobile Quartz Lamp	4	Replacement.						4	

Table 2.9 Result of Examination of Request Equipment – Maternity House of Talas O. H.

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
IV-1	Ambulance Car	1	Replacem.						1	
IV-2	Amnioscopio	1	New purchase		×			×	0	Refer to "Examination of the Details of the Request"
IV-3	Anesthesia Apparatus	3	Replenish.						1	Q'ty refer to "Examination of the Details of the Request"
IV-4	Electrical Unit, Gyne-Obstetric	2	New purchase						1	Idem
IV-5	Autoclave, Large Size	2	Replacem.						2	
IV-7	Mobile Quartz Lamp	6	Replacem.						6	
IV-8	Bed	6	Replacem.					×	0	Refer to "Examination of the Details of the Request"
IV-9-1	Patient Monitor	3	New purchase						2	Q'ty refer to "Examination of the Details of the Request"
IV-9-2	Bedside Monitor, Adult	3	Replenish.						1	Idem
IV-10	Bedside Table	20	Replacem.					×	0	Refer to "Examination of the Details of the Request"
IV-11	Binocular Microscope	3	Replacem.						2	Q'ty refer to "Examination of the Details of the Request"
IV-12	Blood Gas Analyzer	1	New purchase		×		×	×	0	Refer to "Examination of the Details of the Request"
IV-13-1	Centrifuge, Table-top Type	1	Replacem.						1	
IV-13-2	Hematocrit Centrifuge	1	Replacem.						1	
IV-14	Gynecological Table	5	Replacem.					×	0	Refer to "Examination of the Details of the Request"
IV-15	Coagulometer	1	New purchase						1	
IV-16	Colposcope	1	Replacem.						1	
IV-17	Desfibrillator	2	Replacem.		×			×	0	Refer to "Examination of the Details of the Request"
IV-18	Diathermocoagulator	1	New purchase						1	
IV-19	Water Distiller	1	Replacem.						1	

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
IV-20	Weighing Scale, Adult	3	Replacem.						3	
IV-21-1	Electrical Suction Unit, Large Size	3	Replacem.						2	Q'ty refer to "Examination of the Details of the Request"
IV-21-2	Electrical Suction Unit, Medium Size	3	Replacem.						5	
IV-22	Electrocardiograph	1	Replenish.						1	
IV-23	Electrosurgical Unit	3	Replacem.						2	Q'ty refer to "Examination of the Details of the Request"
IV-24	Gynecological Examination Unit	5	Replacem.						6	
IV-25	Fetal Monitor	2	New purchase						2	
IV-26	Gatch Bed	6	Replacem.						8	
IV-27	Hematology Analyzer	1	New purchase						1	
IV-28-1	Hot Air Sterilizer, Large Size	3	Replacem.						2	Q'ty refer to "Examination of the Details of the Request"
IV-28-2	Hot Air Sterilizer, Medium Size	4	Replacem.						6	
IV-29	Hysteroscope, Flexible Type	1	New purchase						1	
IV-30	Basinet	40	Replacem.					×	0	Refer to "Examination of the Details of the Request"
IV-31	Infant Incubator	3	Replacem.						5	
IV-32	Infant Warmer	12	Replacem.						5	Q'ty refer to "Examination of the Details of the Request"
IV-33	Infusion Pump	5	New purchase						2	Idem
IV-34	Instrument Cabinet	4	Replacem.						6	
IV-35	Cesarian Instrument Set	2	Replacem.						2	
IV-36	Operating Instrument Set	3	Replacem.						2	Q'ty refer to "Examination of the Details of the Request"
IV-37	Instrument Table	7	Replacem.						6	Idem

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
IV-38	Electrolyte Analyzer	1	New purchase		×		×	0	Refer to "Examination of the Details of the Request"	
IV-39	Laryngoscope Set, Adult	4	Replacement					3	Q'ty refer to "Examination of the Details of the Request"	
IV-40	Laryngoscope Set, Infant	3	Replacement					4		
IV-41	Operating Light	3	Replacement				×	0	Refer to "Examination of the Details of the Request"	
IV-42	Minilaparotomy Set	1	Replacement					1		
IV-43	Ultrasonic Nebulizer	2	New purchase					2		
IV-44	Delivery Table	3	Replacement					3		
IV-45	Mobile Operating Light	3	Replacement					5		
IV-46	Fetoscope	6	Replacement				×	0	Refer to "Examination of the Details of the Request"	
IV-47	Phototherapy Unit	2	Replacement					2		
IV-48	Physiotherapy Set	1	New purchase		×		×	0	Refer to "Examination of the Details of the Request"	
IV-49	Post-natal Curette Set	10	Replacement					5	Q'ty refer to "Examination of the Details of the Request"	
IV-50	Reanimation Set, Adult	3	Replacement					2	Idem	
IV-51	Medical Refrigerator	8	Replacement					6	Idem	
IV-53	Biochemical Analyzer	1	New purchase					1		
IV-54	Minor Operating Instrument Set	3	Replacement					5		
IV-55	Gynecological Instrument Set	10	Replacement					2	Q'ty refer to "Examination of the Details of the Request"	
IV-56	Sphygmomanometer	15	Replenish.					10	Idem	
IV-57	Stethoscope	15	Replenish.					10	Idem	
IV-58	Stretcher	4	Replacement					2	Idem	

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
IV-59	Suction Unit, Pedal Type	3	Replacem.					×	0	Refer to "Examination of the Details of the Request"
IV-60	Syringe Pump	3	Replacem.						3	
IV-61	Operating Table	3	Replacem.						2	Q'ty refer to "Examination of the Details of the Request"
IV-62	Incubator	1	Replenish.		×			×	0	Refer to "Examination of the Details of the Request"
IV-63	Urine Analyzer	1	New purchase		×			×	0	Idem
IV-64	Ultrasound Scanner	1	Replacem.						1	
IV-65	Ventilator, Adult	5	Replacem.						2	Q'ty refer to "Examination of the Details of the Request"
IV-66	Ventilator, Infant	2	Replacem.						2	
IV-67	Washing Machine	2	Replenish.						1	Q'ty refer to "Examination of the Details of the Request"
IV-68	Weighing Scale, Infant	3	Replacem.						4	
IV-69	General X-Ray Unit	1	Replacem.						1	
IV-70	Wheel Chair	2	Replacem.						2	
IV-71	Fetal Doppler	3	New purchase						3	
IV-72	Boiling Sterilizer	4	Replacem.						4	
IV-73	Delivery Instrument Set	2	Replacem.						2	
IV-74	Film Developing Machine	1	Replenish.						1	
IV-75	X-Ray Instrument Set	1	Replenish.						1	
IV-76-1	Film Illuminator, Medium Size	1	Replenish.						1	
IV-76-2	Film Illuminator, Small Size	2	Replenish.						2	
IV-77	Drum, Large Size	34	Replenish.						34	

No.	Equipment	Req. Q'ty	Classification	Evaluation				Overall Eval.	Q'ty to be Proc.	Remarks
				[1]	[2]	[3]	[4]			
IV-78	Drum, Medium Size	36	Replenish.						36	
IV-79	Drum, Small Size	27	Replenish.						27	
IV-80	Laboratory Instrument Set	1	Replenish.						1	

Table 2.10 List of Equipment to be procured under this Project – Human Reproduction Center

No.	Name of Equipment	Q'ty
I-1	X-Ray Unit	1
I-2	Mammography	1
I-3	Film Developing Machine	1
I-4	X-Ray Instrument Set	1
I-5	Ultrasound Scanner, Color Doppler	1
I-6	Ultrasound Scanner, Black and White	1
I-7	Electrocardiograph	1
I-8	Anesthesia Apparatus	2
I-9	Cytoscope	1
I-11	Hystero-Resectoscope	1
I-12	Laparoscope	1
I-13	Paraphormalin Sterilizer	1
I-14	Cleaning Accessories Set	1
I-15	Electrosurgical Unit	2
I-16	Plastic Surgery Set, Gynecology	1
I-17	Operating Table	3
I-18	Operating Light	2
I-19	Mobile Operating Light	4
I-20	Electrical Suction Unit, Large Size	3
I-21	Electrical Suction Unit, Small Size	2
I-23	Mobile Quartz Lamp	5
I-24	Operating Instrument Set	5
I-26	Hot Air Sterilizer, Midium Size	4
I-27	Fetal Monitor	2
I-28	Infant Incubator	6
I-29	Weighing Scale, Infant	5
I-30	Electrical Suction Unit, Gyne-Obstetric	1
I-31	Infant Warmer	8
I-32	Reanimation Set, Infant	3
I-33	Reanimation Set, Adult	3
I-34	Delivery Table	2
I-35	Obstetric Instrument Set	6
I-37	Defibrillator	1
I-38-1	Patient Monitor	3
I-38-2	Bedside Monitor, Adult	4
I-39-1	Bedside Monitor, Infant	2
I-39-2	Pulse Oximter, Infant	4
I-40	Ventilator, Adult	2
I-41	Blood Gas Analyzer	1
I-42	Infusion Pump	5
I-43	Medical Refrigerator	5
I-44	Colposcope	1
I-45	Fluorescent Microscope	1

No.	Name of Equipment	Q'ty
I-47	Incubator	2
I-48	Analytical Balance	2
I-49	PH Meter	1
I-51	Freezer, Horizontal Type	1
I-53	Diathermocoagulator	1
I-54	Cryodestructor	1
I-55-1	Gynecological Operating Instrument Set	1
I-55-2	Gynecological Diagnostic Instrument Set	1
I-55-3	Cesarian Instrument Set	2
I-56	Drum, Large Size	34
I-57	Drum, Medium Size	36
I-58	Drum, Small Size	27
I-60	Boiling Sterilizer	4
I-61	Laryngoscope Set, Adult	5
I-62	Instrument Table	10
I-63	Hematology Analyzer	1
I-64	Biochemical Analyzer	1
I-65-1	Microplate Reader	1
I-65-2	Microplate Washer	1
I-65-3	Small Instruments for Immune Enzyme Test	1
I-66-1	Autoclave, Bacteriological	1
I-66-2	Small Instrument Set for Bacteriological Test	1
I-67	Binocular Microscope	2
I-68-1	Centrifuge, Table-top Type	1
I-68-2	Hematocrit Centrifuge	1
I-69	Coagulometer	1
I-72	Water Distiller	1
I-78	Autoclave, Large Size	2
I-79	Washing Machine	2
I-84	Surgical Scrub Station	2
I-85	Stretcher	4
I-88	Gatch Bed	8
I-93	Fetal Doppler	3
I-94-2	Gynecological Examination Unit	5
I-95	Phototherapy Unit	4
I-96	Film Illuminator	5
I-97	Ventilator, Infant	2
I-100	Syringe Pump	8
I-103	Laboratory Instrument Set	1
I-104	Clean Bench	1
I-106	Freezer, Vertical Type	1
I-108	Shaker Incubator	1

Table 2.11 List of Equipment to be procured under this Project – Maternity House of Naryn O. H.

No.	Name of Equipment	Q'ty
II-1	Mobile Quartz Lamp	4
II-2	Fetal Monitor	1
II-3	Fetal Doppler	3
II-4	Weighing Scale, Infant	5
II-5	Hot Air Sterilizer, Large Size	1
II-6	Hot Air Sterilizer, Medium Size	4
II-7	Electrical Suction Unit, Gyne-Obstetric	1
II-8	Laryngoscope Set, Adult	3
II-9	Laryngoscope Set, Infant	3
II-10	Infant Incubator	3
II-11	Infant Warmer	3
II-12	Instrument Cabinet	5
II-13	Obstetric Instrument Set	10
II-14	Mobile Operating Light	4
II-15	Electrical Suction Unit, Large Size	2
II-16	Electrical Suction Unit, Small Size	4
II-17	Suction Unit, Pedal Type	3
II-18	Stethoscope	11
II-19	Instrument Table	5
II-20	Sphygmomanometer	11
II-21	Ventilator, Adult	1
II-22	Ventilator, Infant	1
II-23	Infusion Pump	2
II-24	Reanimation Set, Adult	3
II-25	Bedside Monitor, Adult	2
II-26	Gatch Bed	4
II-27	Syringe Pump	3
II-28	Phototherapy Unit	1
II-30	Gynecological Examination Unit	4
II-31	Weighing Scale, Adult	4
II-32	Medical Refrigerator	4
II-35	Autoclave	2
II-36	Patient Monitor	2
II-37	Electrocardiograph	2
II-38	Instrument Tray	14
II-39	Stretcher	3
II-40	Ultrasonic Nebulizer	4
II-41	Instrument Carriage	4
II-42	Cesarian Instrument Set	2
II-44	Colposcope	1
II-45	Minilaparotomy Set	2
II-46	Gynecological Instrument Set	2

No.	Name of Equipment	Q'ty
II-48	Operating Table	2
II-49	Electrosurgical Unit	1
II-50	Anesthesia Apparatus	2
II-51	Defibrillator	1
II-52	PH Meter	1
II-53	Binocular Microscope	2
II-54	Clinical Refractometer	1
II-55	Ultrasound Scanner, Black and White	1
II-56	Biochemical Analyzer	1
II-57	Centrifuge, Table-top Type	2
II-60	Coagulometer	1
II-61	Hematology Analyzer	1
II-62	Washing Machine	2
II-64	Post-natal Curette Set	6
II-69	Reanimation Bed	3
II-70	Uterine Probe	16
II-71	Operating Instrument Set	3
II-72	Minor Operating Instrument Set	3
II-74	Delivery Table	1
II-75	Delivery Instrument Set	5
II-76	Laboratory Instrument Set	1

Table 2.12 List of Equipment to be procured under this Project – Maternity House of Issyk-kul O. H.

No.	Name of Equipment	Q'ty
III-1	Ventilator, Adult	2
III-2-1	Patient Monitor	2
III-2-2	Bedside Monitor, Adult	2
III-3	Reanimation Set, Adult	2
III-4	Reanimation Set, Infant	2
III-5	Laryngoscope Set, Infant	2
III-6	Laryngoscope Set, Adult	2
III-7	Defibrillator	2
III-8-1	Medical Refrigerator	6
III-8-2	Freezer	2
III-9	Electrical Suction Unit	10
III-10	Anesthesia Apparatus	2
III-11	Operating Table	4
III-12	Operating Light	3
III-13	Mobile Operating Light	3
III-14	Operating Instrument set	2
III-15-1	Gynecological Instrument Set	10

No.	Name of Equipment	Q'ty
III-15-2	Gynecological Operating Instrument Set	2
III-16	Instrument Cabinet	3
III-17	Stretcher	4
III-18	Electrosurgical Unit	2
III-19	Hot Air Sterilizer, Large Size	2
III-20	Hot Air Sterilizer, Medium Size	2
III-21	Autoclave	2
III-22	Drum, Large Size	14
III-23	Drum, Medium Size	18
III-24	Drum, Small Size	18
III-25	Washing Machine	3
III-26-1	Fetal Monitor	2
III-26-1	Fetal Doppler	3
III-27	Ultrasound Scanner, Black and White	1
III-28	Colposcope	1
III-29-1	Electrocardiograph	1
III-29-2	Electrocardiograph, Portable	1
III-30-1	Syringe Pump	5
III-30-2	Infusion Pump	3
III-31	Electrical Suction Unit, Gyne-Obstetric	1
III-32	Stethoscope	14
III-33	Sphygmomanometer	14
III-34	Weighing Scale, Infant	3
III-35	Infant Incubator	3
III-36	Infant Warmer	4
III-37	Phototherapy Unit	4
III-38	Ventilator, Infant	2
III-39	Gatch Bed	7
III-43	Ultrasonic Nebulizer	4
III-46	Binocular Microscope	2
III-47	Biochemical Analyzer	1
III-48	Centrifuge, Table-top Type	3
III-49	Coagulometer	1
III-52	Hematology Analyzer	1
III-54	X-Ray Unit	1
III-56	Incubator	2
III-57	Water Distiller	2
III-59	Clinical Refrigerator	1
III-60	Hysteroscope, Flexible Type	1
III-61	Ambulance Car	1
III-62	Minor Operating Instrument Set	2
III-63	Laboratory Instrument Set	1
III-64	Water Bath	1
III-65	Mobile Quartz Lamp	4

Table 2.13 List of Equipment to be procured under this Project – Maternity House of Talas O. H.

No.	Name of Equipment	Q'ty
IV-1	Ambulance Car	1
IV-3	Anesthesia Apparatus	1
IV-4	Electrical Unit, Gyne-Obstetric	1
IV-5	Autoclave, Large Size	2
IV-7	Mobile Quartz Lamp	6
IV-9-1	Patient Monitor	2
IV-9-2	Bedside Monitor, Adult	1
IV-11	Binocular Microscope	2
IV-13-1	Centrifuge, Table-top Type	1
IV-13-2	Hematocrit Centrifuge	1
IV-15	Coagulometer	1
IV-16	Colposcope	1
IV-18	Diathermocoagulator	1
IV-19	Water Distiller	1
IV-20	Weighing Scale, Adult	3
IV-21-1	Electrical Suction Unit, Large Size	2
IV-21-2	Electrical Suction Unit, Medium Size	5
IV-22	Electrocardiograph	1
IV-23	Electrosurgical Unit	2
IV-24	Gynecological Examination Unit	6
IV-25	Fetal Monitor	2
IV-26	Gatch Bed	8
IV-27	Hematology Analyzer	1
IV-28-1	Hot Air Sterilizer, Large Size	2
IV-28-2	Hot Air Sterilizer, Medium Size	6
IV-29	Hysteroscope, Flexible Type	1
IV-31	Infant Incubator	5
IV-32	Infant Warmer	5
IV-33	Infusion Pump	2
IV-34	Instrument Cabinet	6
IV-35	Cesarian Instrument Set	2
IV-36	Operating Instrument Set	2
IV-37	Instrument Table	6
IV-39	Laryngoscope Set, Adult	3
IV-40	Laryngoscope Set, Infant	4
IV-42	Minilaparotomy Set	1
IV-43	Ultrasonic Nebulizer	2
IV-44	Delivery Table	3
IV-45	Mobile Operating Light	5
IV-47	Phototherapy Unit	2
IV-49	Post-natal Curette Set	5
IV-50	Reanimation Set, Adult	2

No.	Name of Equipment	Q'ty
IV-51	Medical Refrigerator	6
IV-53	Biochemical Analyzer	1
IV-54	Minor Operating Instrument Set	5
IV-55	Gynecological Instrument Set	2
IV-56	Sphygmomanometer	10
IV-57	Stethoscope	10
IV-58	Stretcher	2
IV-60	Syringe Pump	3
IV-61	Operating Table	2
IV-64	Ultrasound Scanner	1
IV-65	Ventilator, Adult	2
IV-66	Ventilator, Infant	2
IV-67	Washing Machine	1
IV-68	Weighing Scale, Infant	4
IV-69	General X-Ray Unit	1
IV-70	Wheel Chair	2
IV-71	Fetal Doppler	3
IV-72	Boiling Sterilizer	4
IV-73	Delivery Instrument Set	2
IV-74	Film Developing Machine	1
IV-75	X-Ray Instrument Set	1
IV-76-1	Film Illuminator, Medium Size	1
IV-76-2	Film Illuminator, Small Size	2
IV-77	Drum, Large Size	34
IV-78	Drum, Medium Size	36
IV-79	Drum, Small Size	27
IV-80	Laboratory Instrument Set	1

(3) Specifications of Major Equipment

The specifications of major equipment to be procured in this Project are as follows.

Table 2.14 Specifications of Main Equipment

No.	Equipment	Principal Specifications	Application	Q'ty
1	X-Ray Unit	Major components: Table for fuoroscopy, X-ray high voltage generator, bucky stand, etc. Type: Inverter type Tube voltage: 40 to 150 kV approx. Focal spot: 0.3mm/0.8mm	Primarily radiographic for chest X-ray and fluoroscopy for salpingraphy.	2
2	General X-Ray Unit	Major components: High voltage generator, X-ray tube bucky stand, etc. Type: Inverter type Tube voltage: 40 to 150 k V approx. Focal spot: 0.6mm/1.2mm	Primarily radiographic for chest X-ray.	1
3	Mammography	Major components: Main unit, high voltage generator, X-ray tube, etc. Type: Inverter type Focal spot: 0.1/0.3mm approx.	For use in mammary diagnosis.	1
4	Film Developing Machine	Type: Table-top type Size of film: 4 × 4 to 14 × 17 inches. Processing time: 3 min. or less Processing capacity: Not less then 75 (size 10 × 12 inches) films/h Others: With stand	For developing X-ray films.	2
5	Ultrasound Scanner, Color Doppler	Scanning method: Convex, linear Image display modes: B, B/B, M, B/M, color doppler Monitor: Color Probe: Convex, transvaginal, linear Others: Printer black and white	To examine the structure of internal organ of patient through the blood flowing conditions. Mainly will be used to check the growth condition of fetus, to detect cogenital deseases and diagnosis of gynecological diseases.	1
6	Ultrasound Scanner, Black and White A	Scanning method: Convex, linear Image display modes: B, B/B, M, B/M Monitor: Black and white Probe: Convex, transvaginal Others: Printer black and white	To examine the structure of internal organ, detect the patient abnormality, to know the growth conditions of fetus, etc.	1
7	Ultrasound Scanner, Black and White B	Scanning method: Convex, linear Image display modes: B, B/B, M, B/M, PWD Monitor: Black and white Probe: Convex, transvaginal Others: Printer black and white	Idem	3
8	Anesthesia Apparatus A	Major components: Main unit, ventilator, air compressor Flowmeter: O2, NO2, air Vaporizer: Halothene, isoflurane Respiration mode : CMV	Using for general anesthesia for operation.	2
9	Anesthesia Apparatus B	Major components: Main unit, ventilator, air compressor Flowmeter: O2, NO2 Vaporizer: Halothene, isoflurane Respiration mode: CMV	Idem	5
10	Cystoscope	Major components: Light source, telescope, sheath, forceps, trolley, etc.	For use in diagnosis and treatment of urethra and bladder.	1

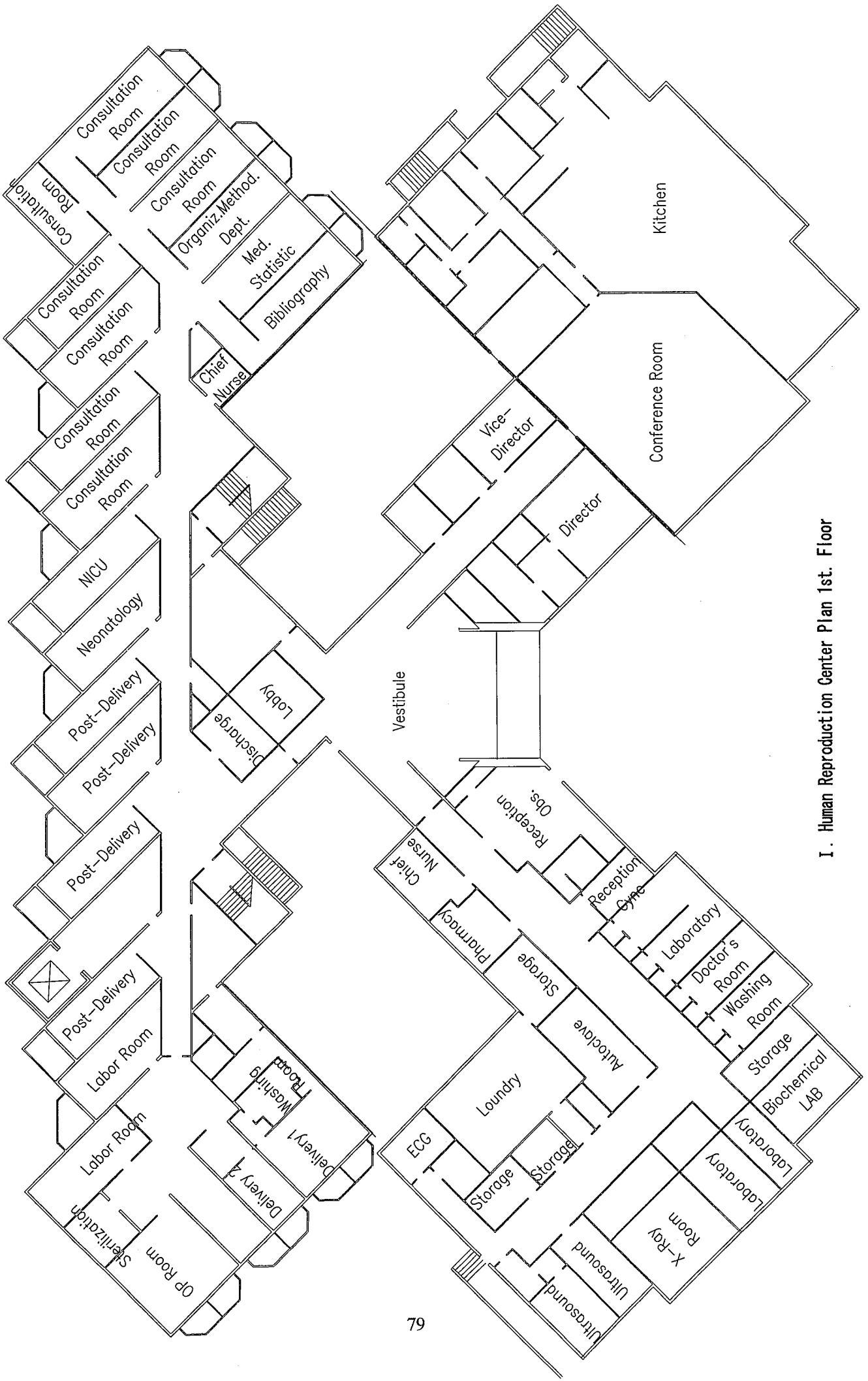
No.	Equipment	Principal Specifications	Application	Q'ty
11	Histero-Resectoscope	Major components: Light source, telescope, electrosurgical unit, forceps, video system, trolley, etc.	Using for uterine operations.	1
12	Laparoscope	Major components: Light source, telescope, trocar, insufflator electrosurgical unit, forceps, video system, suction unit, trolley, etc.	Using principally for gynecological operations such as ovarian and uterine cyst surgery.	1
13	Operating Table	Table-top size: 450(W) × 1900(l)mm approx. Elevation method: Manual hydraulic Others: Screen frame, knee crutches, shoulder support, foot rest	For use in cesarian operations and gynecological operations.	11
14	Gynecological Diagnostic Instrument Set	Major components: Cusco vaginal speculum various sizes, forceps various tpes	For gynecological diagnosis.	1
15	Defibrillator	Type: Portable Padles: For adult and pediatric Others: Cart and battery	To recover normal heartbeat of patient in case of ventricular flutter in operations, etc.	4
16	Bedside Monitor, Adult	Parameters: Pulse, respiration, NIBP, Tem-p., SpO2 Display: Color LCD Others: Recorder	To monitor the biological conditions of patients with serious illness.	9
17	Beside Monitor, Infant	Parameters: Pulse, respiration, NIBP, Tem-p., SpO2 Display: Color LCD Others: Recorder	To monitor the biological conditions of infant patient with serious illness.	2
18	Patient Monitor	Parameters: Pulse, respiration, NIBP, Tem-p., SpO2 Display: Color LCD Others: Recorder, cart	To monitor the conditions of patient during the operation.	9
19	Ventilator, Adult	Type: For adult Ventilation mode: CMV, IMV Oxygen concentration: 21 to 100% Others: Alarm	To help patients who have dificulty with breathing.	7
20	Ventilator, Infant	Type: For infant Ventilation mode: CMV, IMV Oxygen concentration: 21 to 100% Others: Alarm	To help infants and prematures babies who have dificulties with breathing.	7
21	Blood Gas Analyzer	Parameters: pH, H+, pCO2 Calculated parameters: B.E, ctCO2, etc. Sample volume: Not more than 95 μ L	To check the breathing conditions, etc. of the patient through the measuring of oxygen and carbon dioxide concentration, etc.	1
22	Florescente Microscope	Major composition: Main unit, trinocular eyepiece tube, eyepiece, objective lens 4x, 10x, 20x, 40x, 100x	To identify the pathogen in microbiological test.	1
23	Washing Machine	Control: Microprocessor Capacity: 30Kg approx. Capacity of cylinder: 300L approx.	To wash the medical uniforms, sheets for operations, bed sheets, etc.	8
24	Hematology Analyzer	Number of parameters: 18 Measuring parameters: WBC, RBC, HGB, HCT, MCV, MCH, etc. Measuring data: Display Total blood sample volume: 10 μ L approx. Capacity of processing: 60 samples/h	To calculate the leukocyte, erythrocyte, thombocyte of blood of patient.	4
25	Biochemical Analyzer A	Available wavelength range: 340, 405, 500, 546, 578, 620, 670nm Measuring method: Single beam Light source: Halogen lamp or Xenon lamp Display: LCD	To know the conditions of patients based on the serum examinations.	3

No.	Equipment	Principal Specifications	Application	Q'ty
26	Biochemical Analyzer B	Throughput: 180 test/h approx. Number of analyzable test: 1 to 48 approx. Reagent volume: 50 to 400 μ L Sample volume: 30 to 30 μ L	Idem	1
27	Coagulometer	Parameters: PT, APTT, Fbg, TTO, TT, etc. Detection range: Fbg50 to 450mg/dl approx. Sample volume: 50uL(Pt, APTT) to 100 μ L Display: LCD	For measuring the coagulation of blood of patient before operation and delivery.	4
28	Laboratory Instrument Set A	Beake, cylinder, flask, pipette, etc.	For preparing reagents, to use in dispensing, etc.	1
29	Autoclave, Large Size	Capacity: 200 L approx. Operation: Automatic Door: Manual	To sterilize medical instruments, linen, etc. to be used in operations and deliveries.	7
30	Autoclave, Medium Size	Capacity: 160 l approx. Operation: Automatic Door: Manual	Idem	1
31	Microplate Reader	Wavelength: 400 to 800nm approx. Light source: Halogen lamp or Xenon lamp Measuring time: 9 sec/96-well plate Display: LCD	To test the immunity functions from blood serum of patient.	1
32	Ambulance Car	Type: 4 wheel drive type Engine: Diesel Others: Stretcher, etc.	To transport obstetric-gynecological emergency patient.	2
33	Surgical Scrub Station	Type: For 2 persons Sterilization method: Filter and ultraviolet lamp Others: Brush case, liquid dispenser	For doctors, nurses and midwives to wash their hands before operations and deliveries.	2

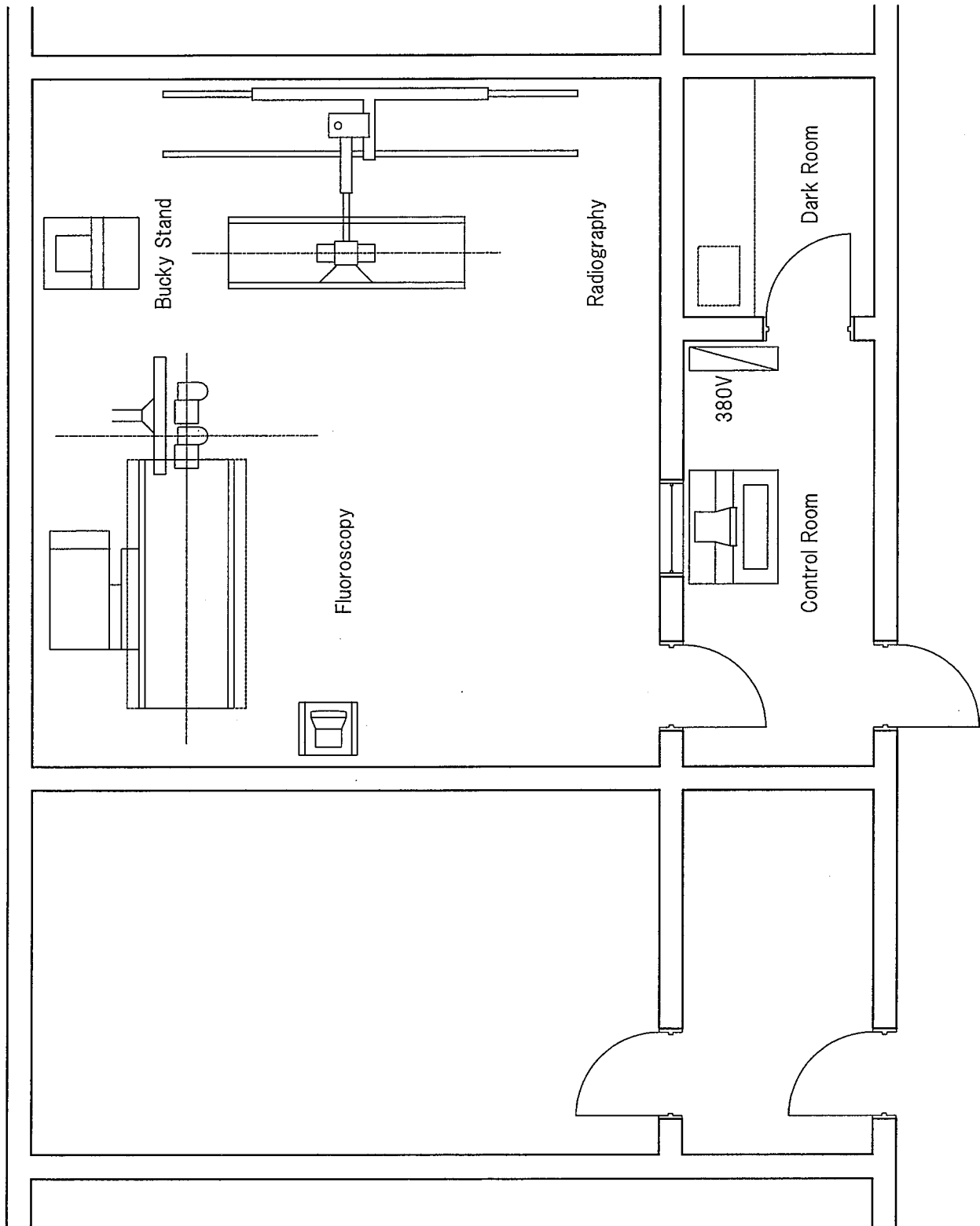
2-2-3 Basic Design Drawing

Table 2.15 Drawing List

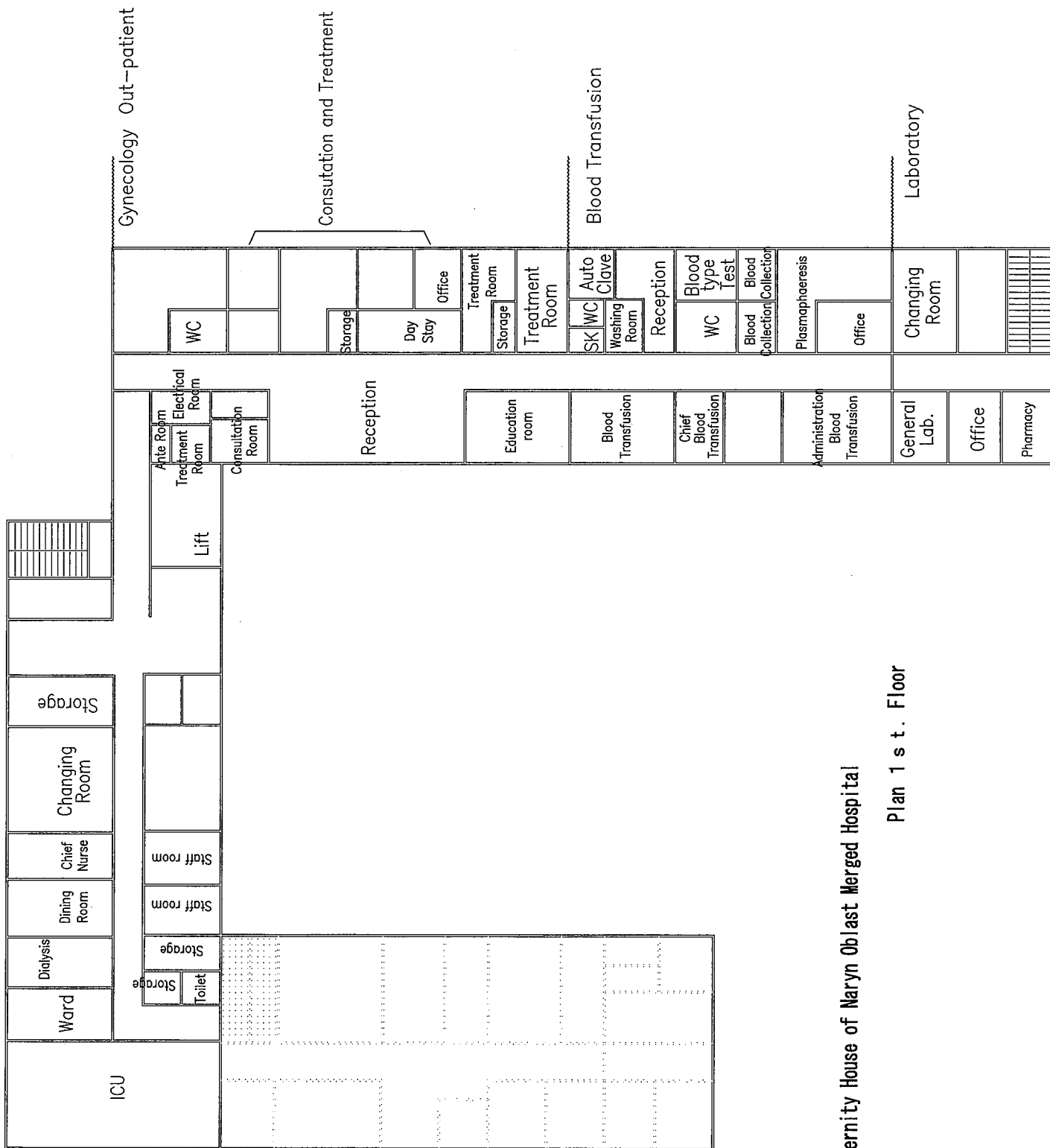
Hospital Name	Title	Scale	Page NO.
Human Reproduction Center	Plan 1 st . Floor	1/300	79
	Plan 2 nd .3 rd Floor	1/300	80
	X-RAY Room	1/50	81
Maternity House of Naryn Oblast Merged Hospital	Plan 1 st . Floor	1/300	82
	Plan 2 nd . Floor	1/300	83
	Plan 3 rd . Floor	1/300	84
Maternity House of Issyk-kul Oblast Merged Hospital	Plan 2 nd . Floor, A-build.	1/200	85
	Plan 1 st . Floor, B-build.	1/300	86
	Plan 2 nd . Floor, B-build.	1/300	87
	Plan 1 st . Floor, G-build.	1/200	88
	Plan 1 st . Floor, V-build.	1/400	89
	Plan 2 nd . Floor, V-build.	1/400	90
	Plan 3 rd . Floor, V-build.	1/400	91
	X-RAY Room	1/50	92
Maternity House of Talas Oblast Merged Hospital	Plan 1 st . Floor	1/500	93
	Plan 2 nd . Floor	1/500	94
	X-RAY Room	1/50	95



I. Human Reproduction Center Plan 1st. Floor

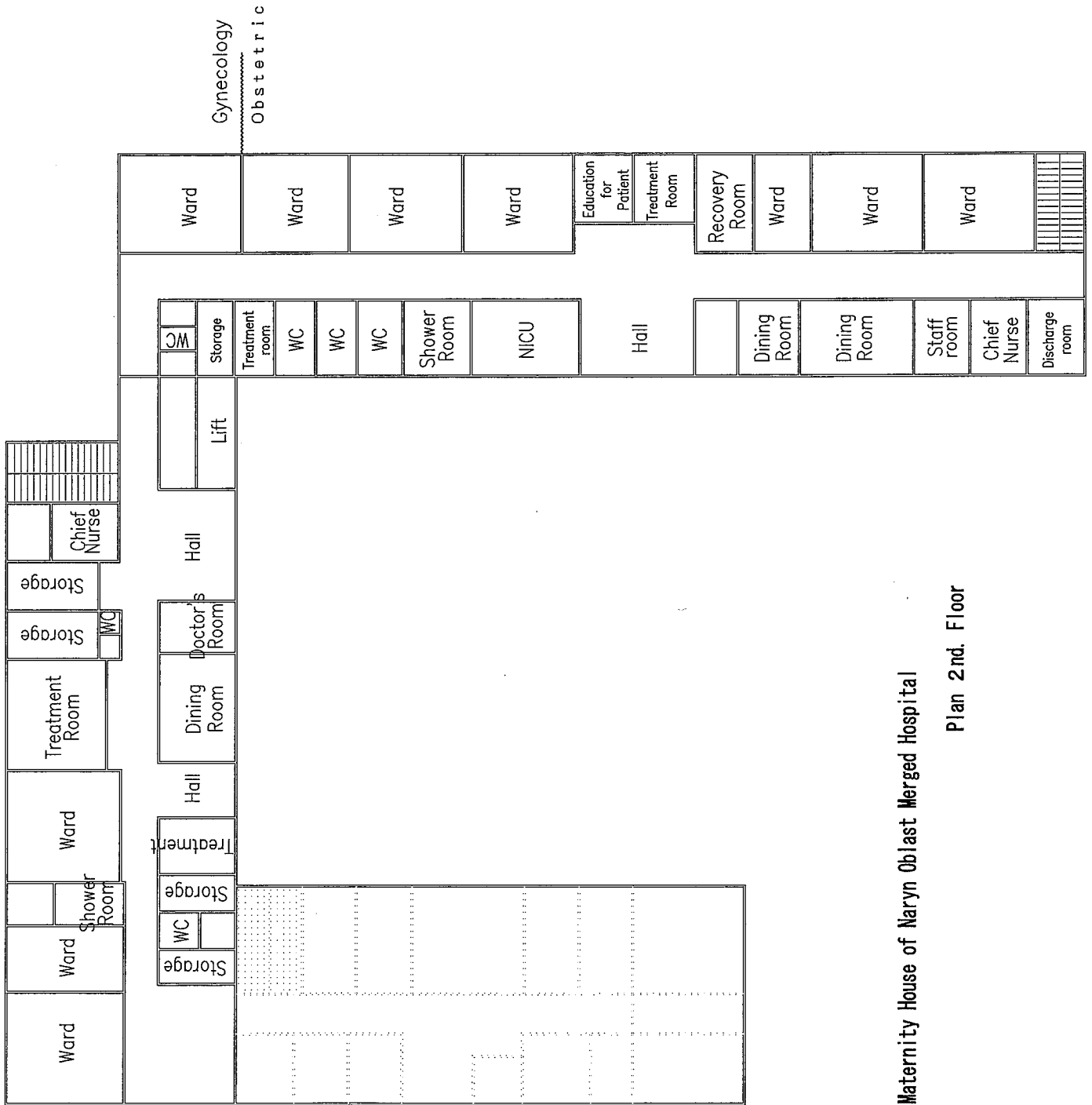


I. Human Reproduction Center X-Ray Room



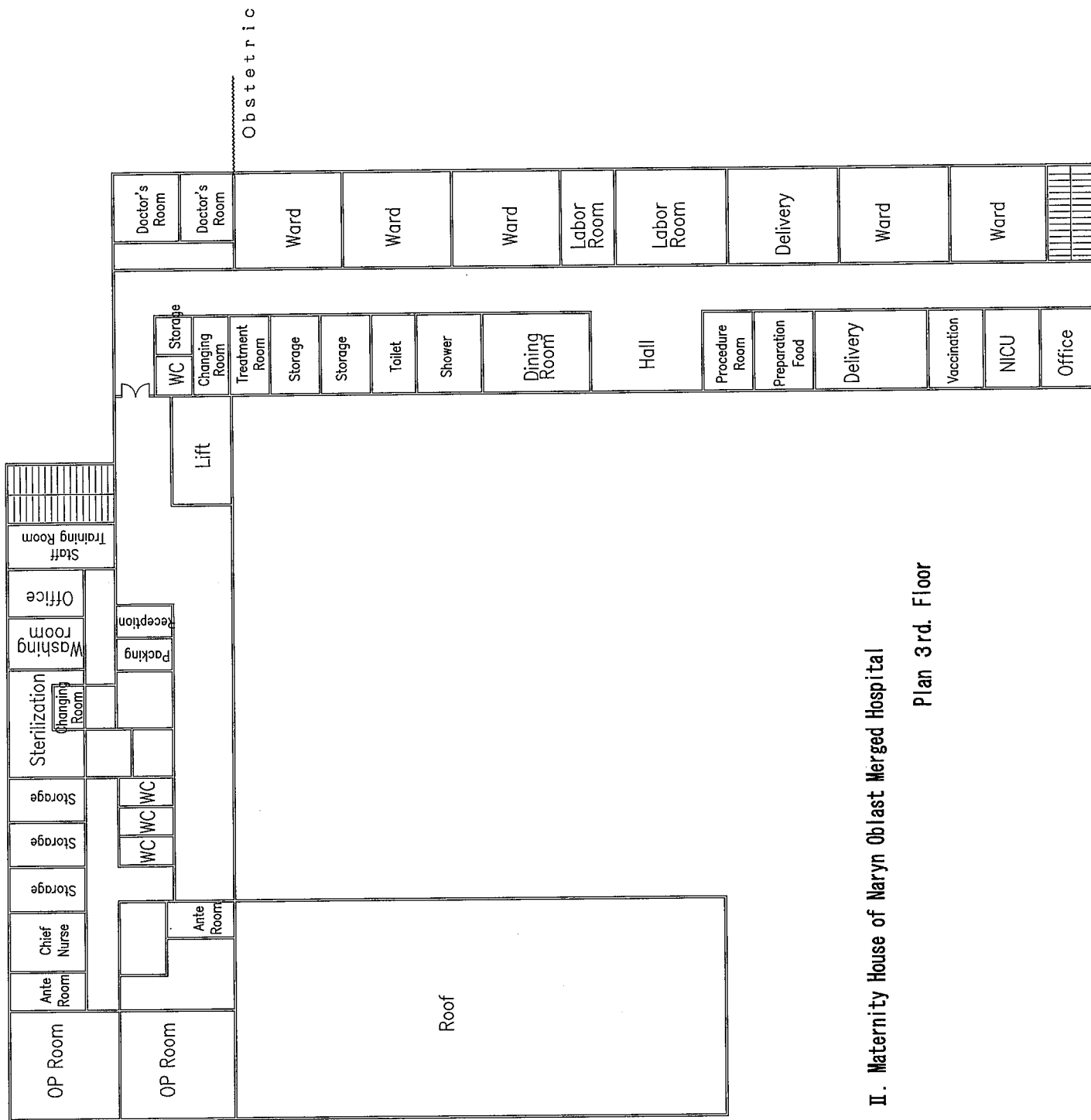
II. Maternity House of Naryn Oblast Merged Hospital

Plan 1 s t . Floor



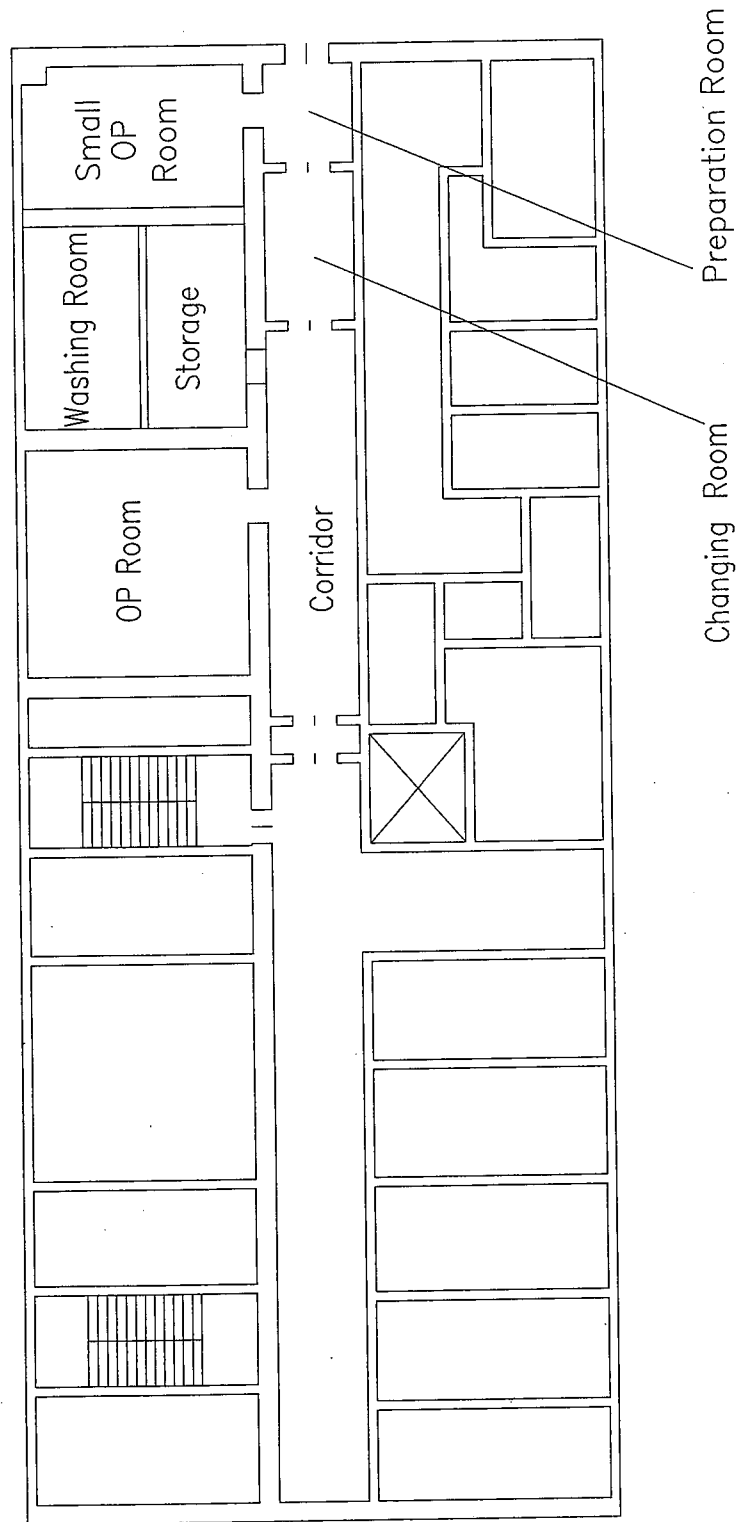
II. Maternity House of Naryn Oblast Merged Hospital

Plan 2nd. Floor

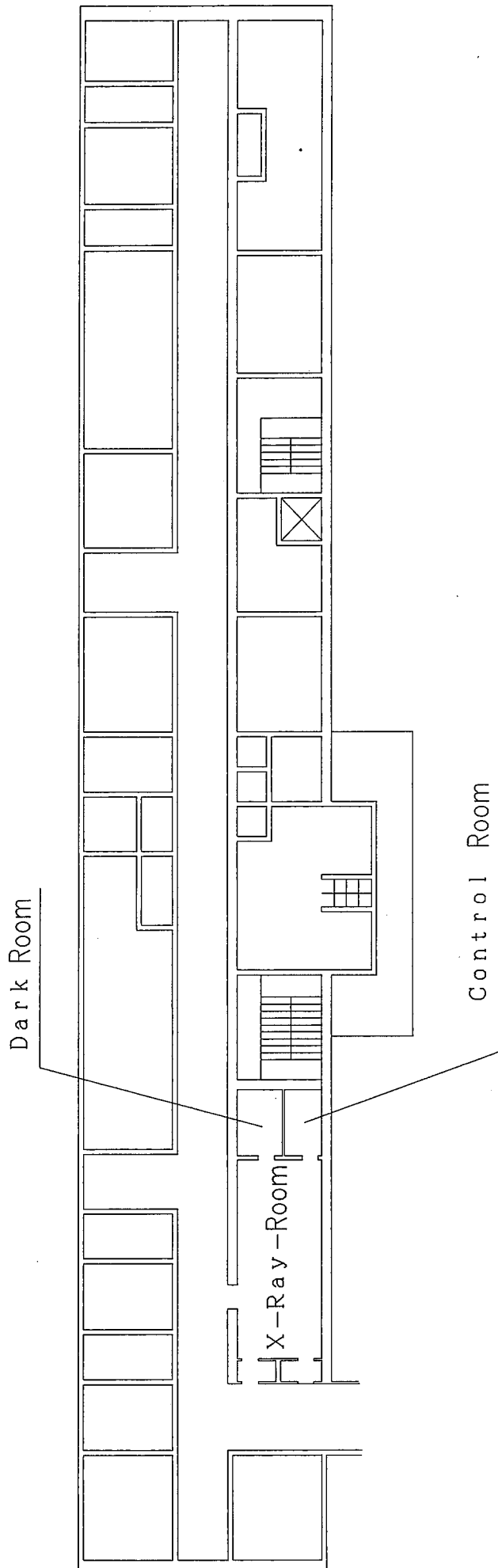


II. Maternity House of Naryn Oblast Merged Hospital

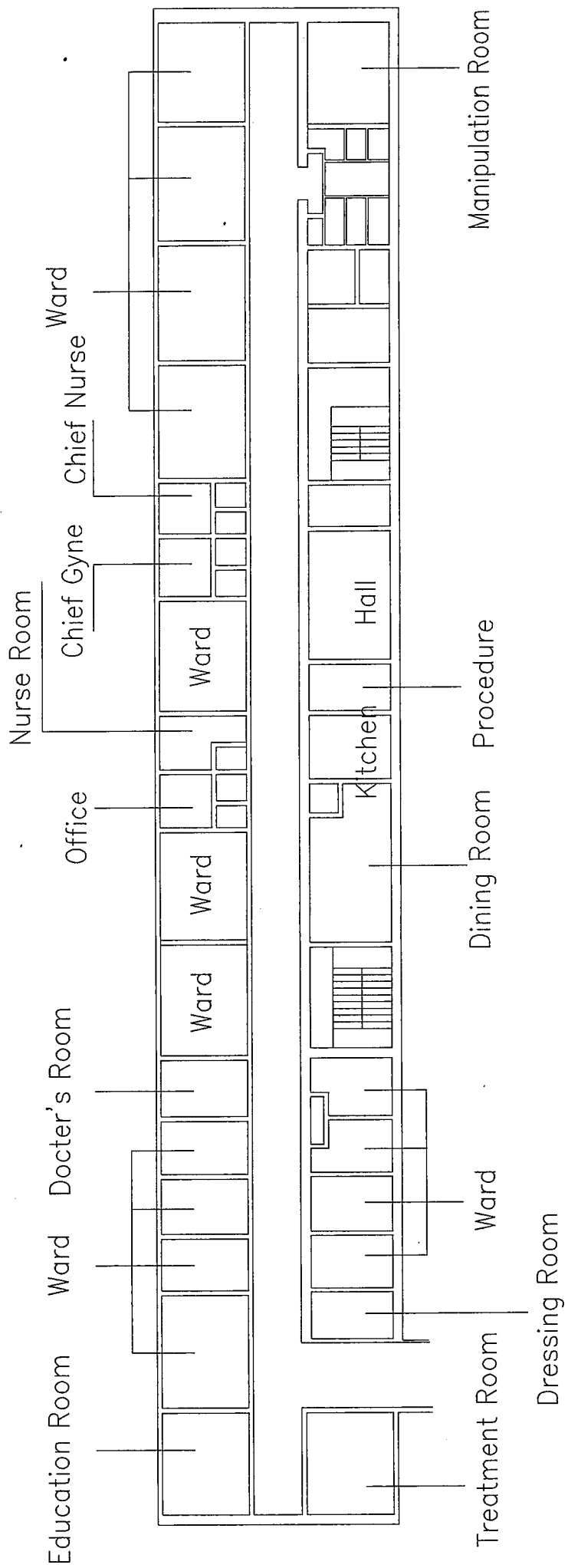
Plan 3rd. Floor



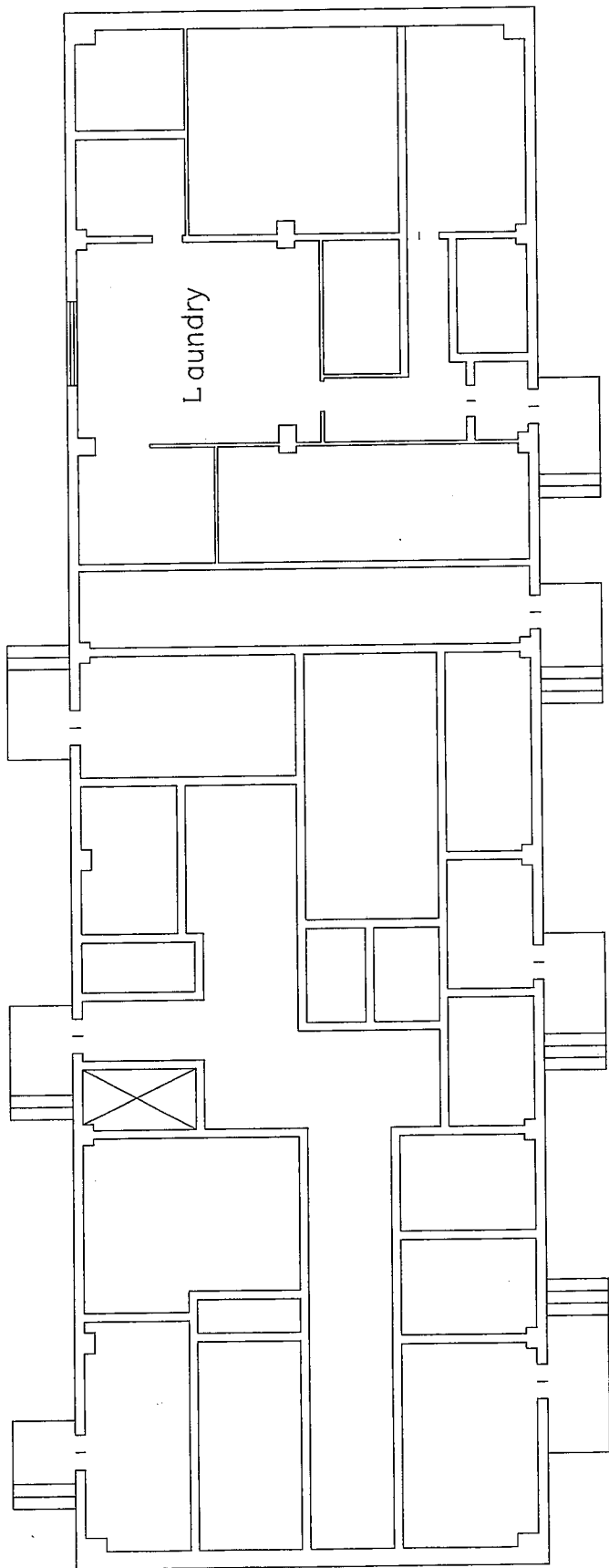
III. Maternity House of I ssyk-kul Oblast Merged Hospital | Plan 2nd. Floor | Block A



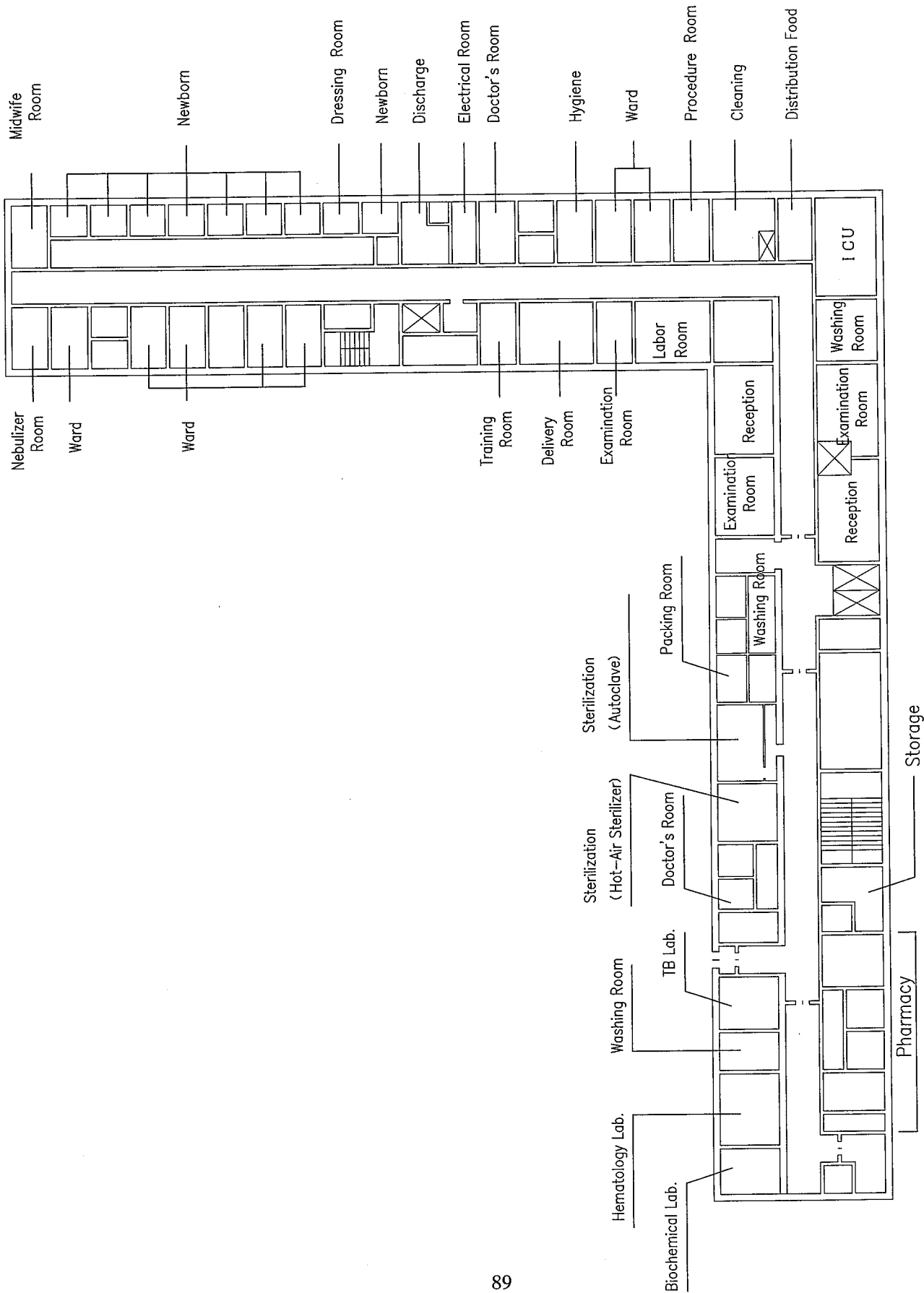
III. Maternity House of Issyk-kul Oblast Merged Hospital Plan 1st. Floor Block B



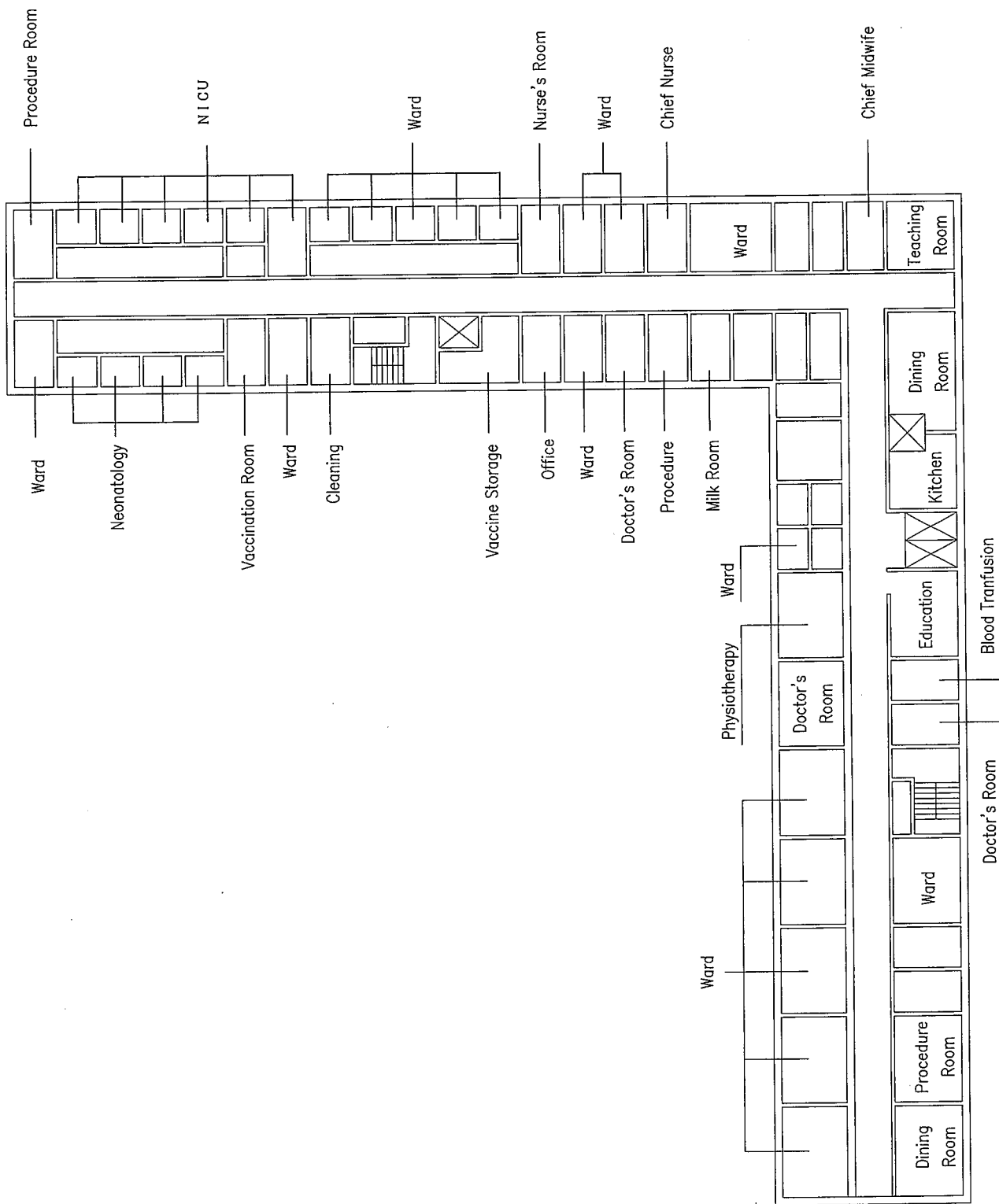
III. Maternity House of I ssyk-kul Oblast Merged Hospital Plan 2nd. Floor Block B



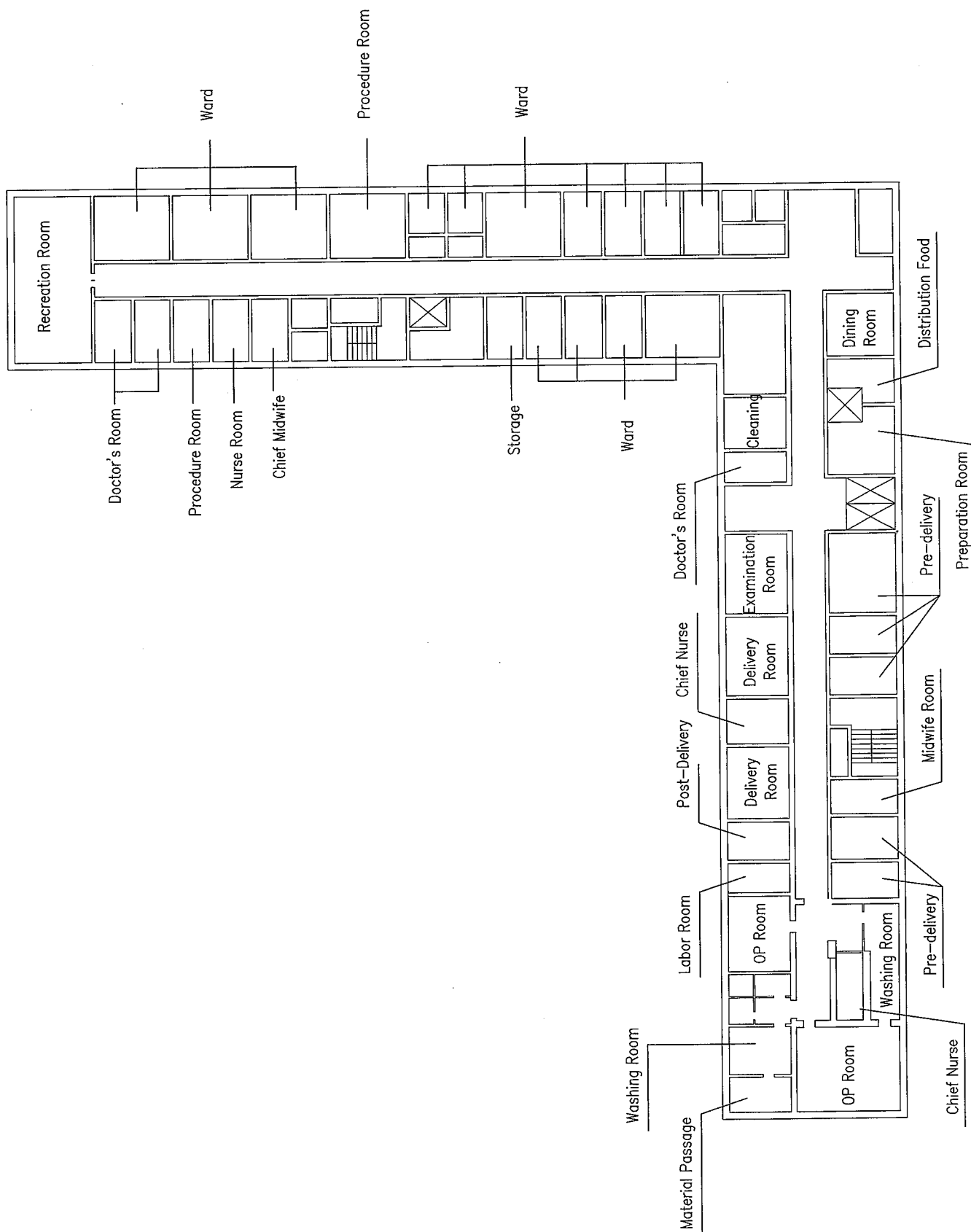
III. Maternity House of Issyk-kul Oblast Merged Hospital Plan 1st. Floor Block G



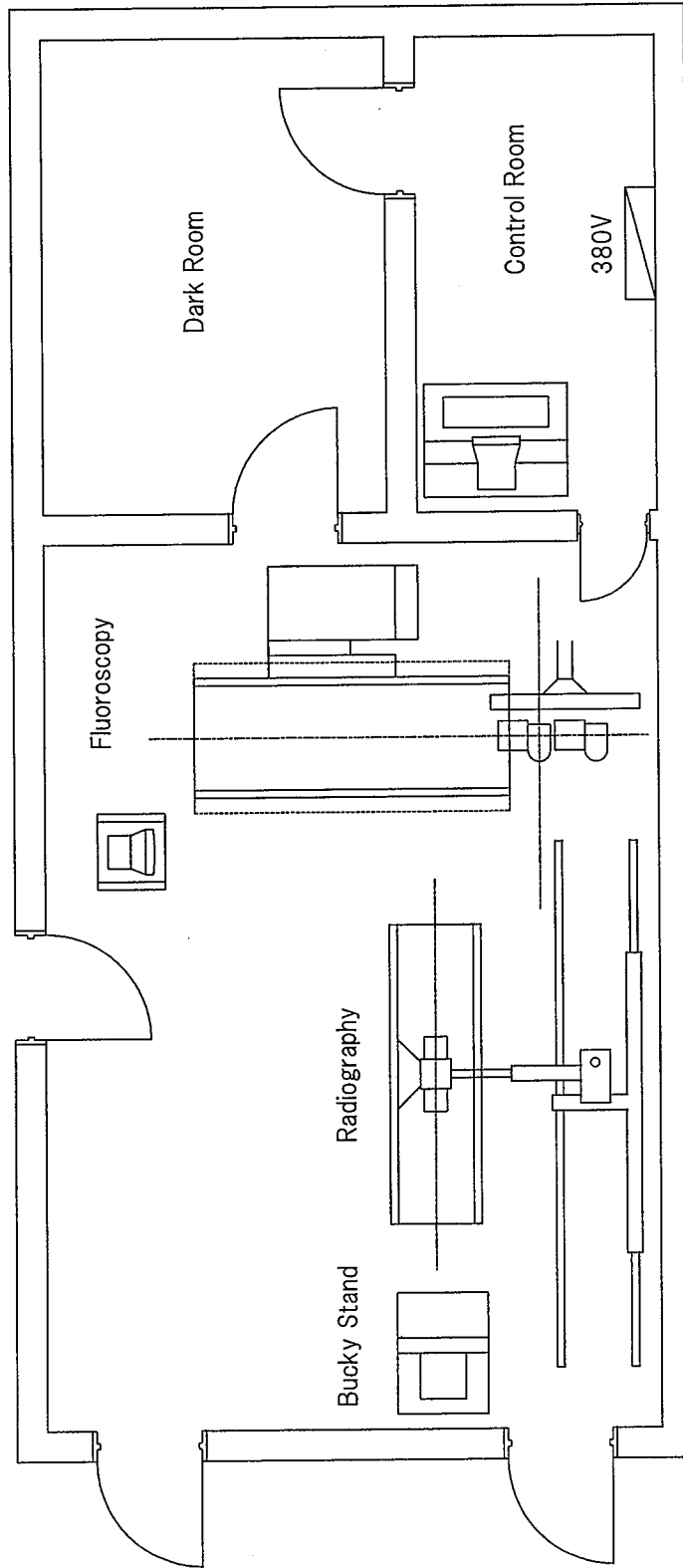
III. Maternity House of I ssyk-kul Oblast Merged Hospital Plan 1st. Floor Block V



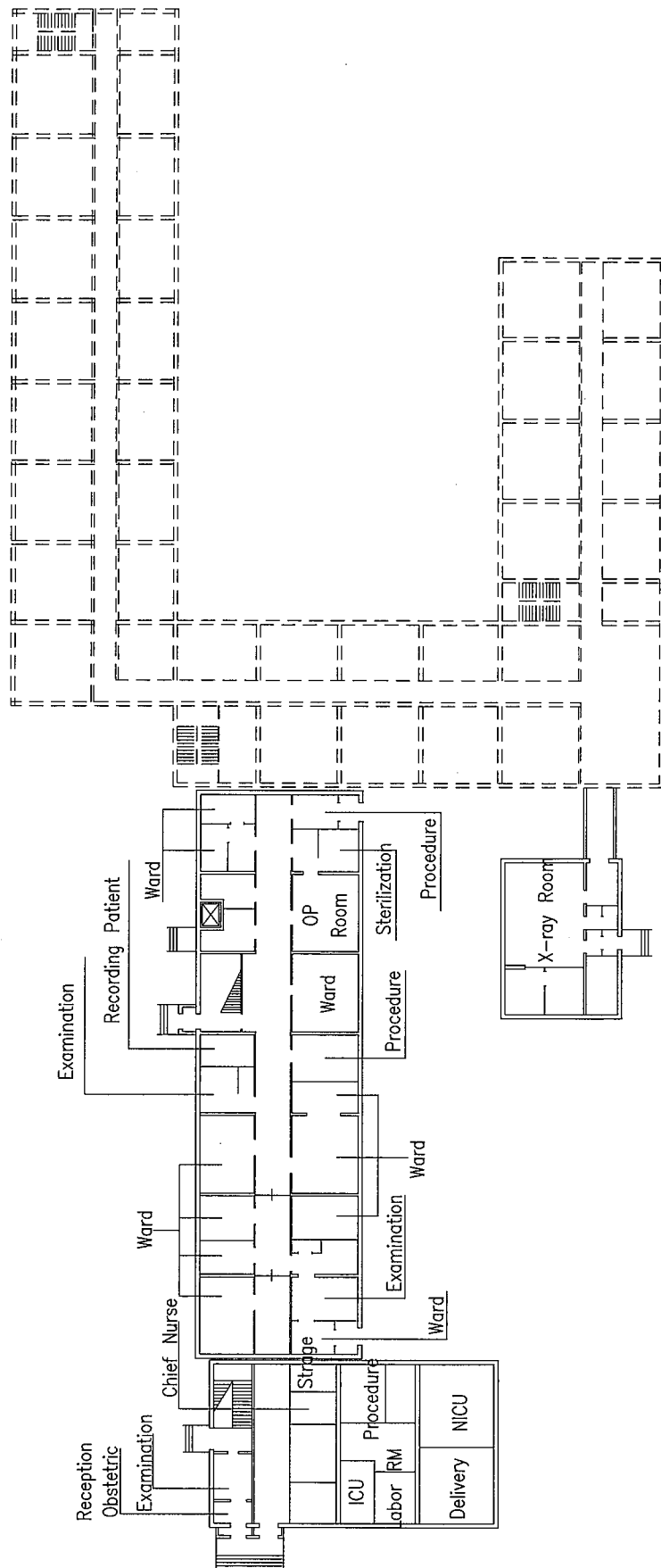
III. Maternity House of I ssyk-kul Oblast Merged Hospital Plan 2nd. Floor Block V



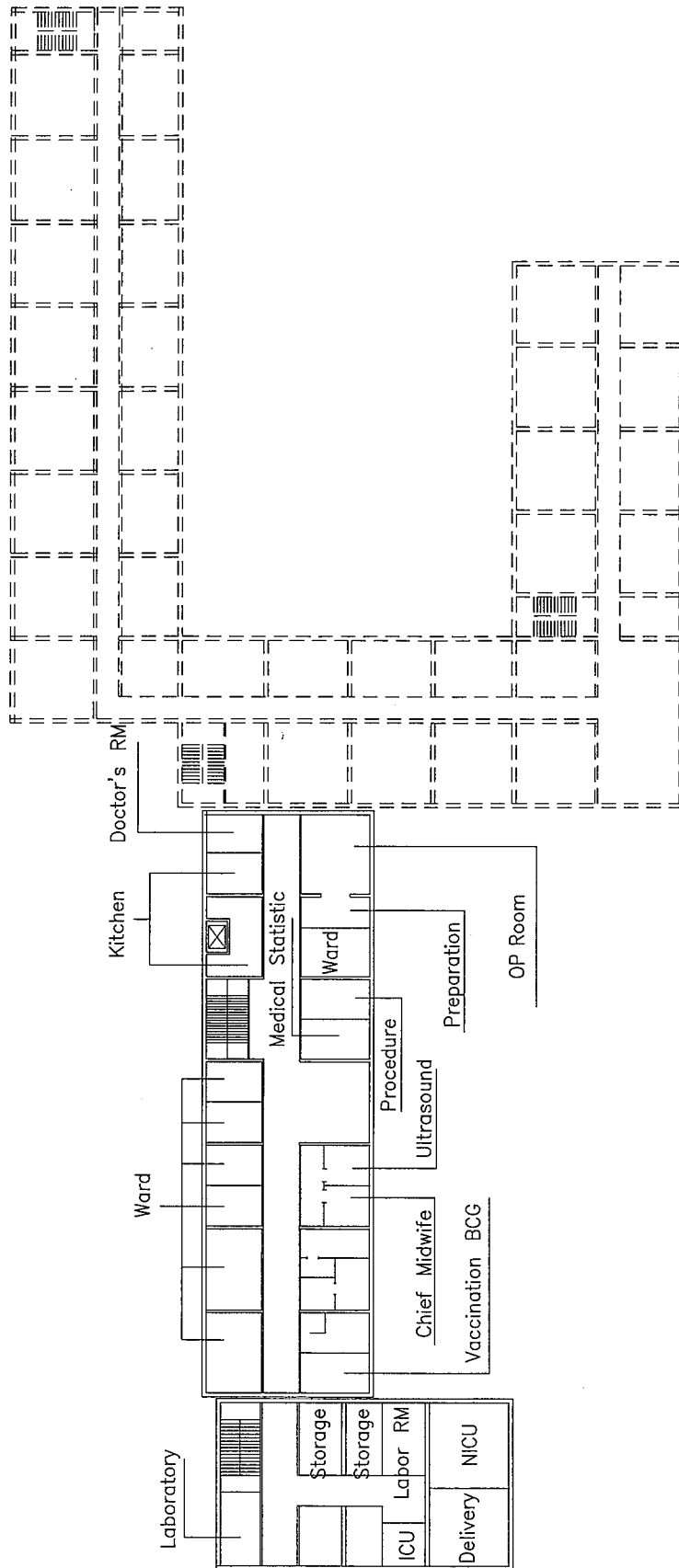
III. Maternity House of I ssyk-ku Oblast Merged Hospital Plan 3rd. Floor Block V



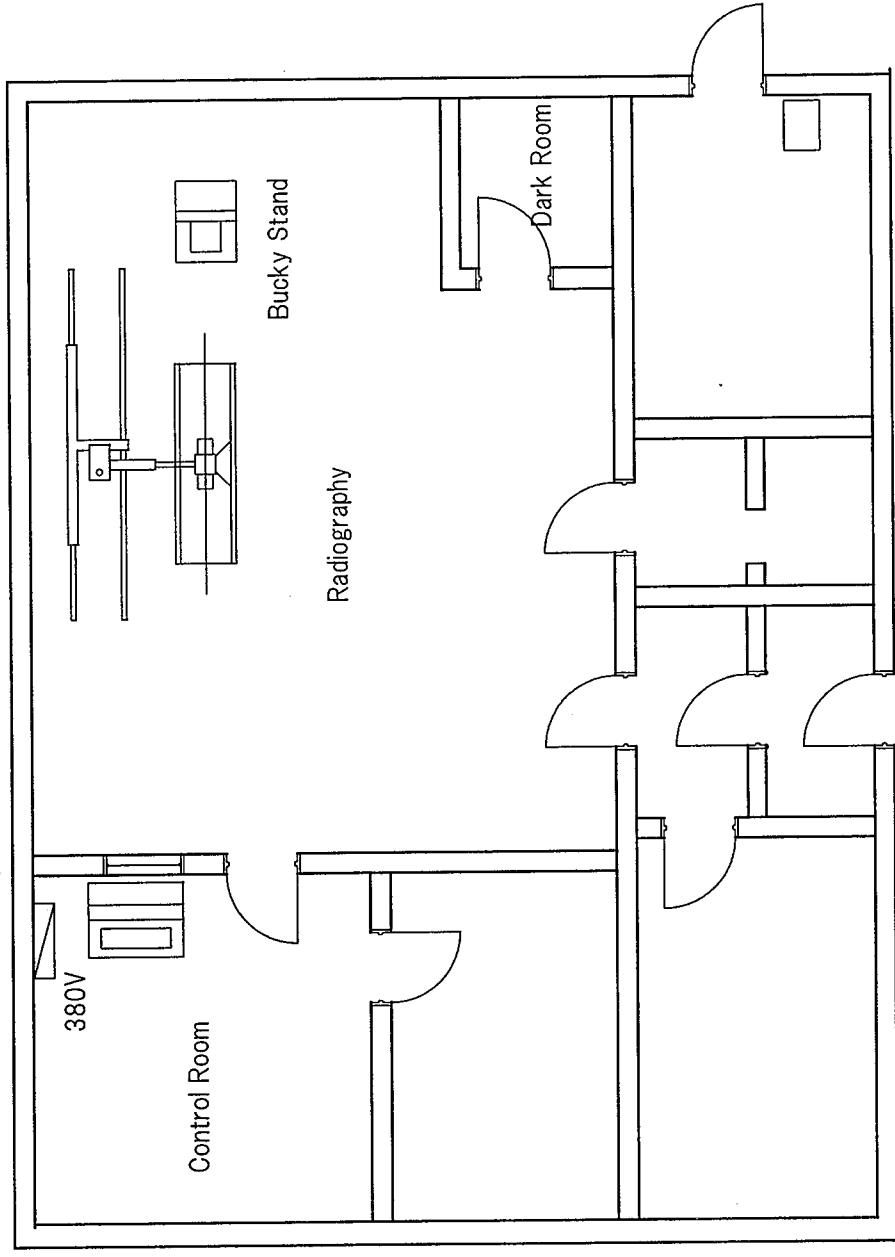
III. Maternity House of Issyk-kul Oblast Merged Hospital X-Ray Room



IV. Maternity House of Talas Oblast Merged Hospital Plan 1 s t . Floor



IV. Maternity House of Talas Oblast Merged Hospital Plan 2nd. Floor



IV. Maternity House of Talas Oblast Merged Hospital X-Ray Room

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

Through the decision of the Cabinet Council of the Government of Japan, this project is to be implemented formally within the framework of grant aid cooperation of the Government of Japan after the signing of the Exchange of Notes, which is to be approved by the government of the two countries.

(1) Organization Responsible for the Implementation of the Project

The Ministry of Finance of the Kyrgyz Republic is the organization responsible for the management and the Ministry of Health of the Kyrgyz Republic the organization executive for the implementation of this project. The Head of the Department of Health Care Reforms of the Ministry of Health is to be responsible for actual operations to be carried out under this project.

The Ministry of Finance of the Kyrgyz Republic is the contracting party to contract with the consultant and the corporation involved in the implementation of this project.

The Ministry of Health of the Kyrgyz Republic is the organization responsible for the cost of repair and renovation of the objective facilities of this project. Each objective facility is the organizing agency for the repair/renovation work required to install the medical equipment procured by this project.

(2) Consultant

After signing the Exchange of Notes, the Ministry of Finance of the Kyrgyz Republic will enact the Consultant Agreement with a qualified Japanese consultant firm in order to start working on detail drawings and to begin the supervision of this project. The Agreement is required to be certified by the Government of Japan. It is desirable that a Japanese firm should be engaged as soon as possible after the signing of the Exchange of Notes in order for the project to proceed smoothly.

Once engaged the consultant will create detail drawings and tender documents based on the basic design report. The detail drawings and tender documents should be approved by the Ministry of Finance and Ministry of Health of the Kyrgyz Republic using the stipulated procedure.

The Consultant is to facilitate the tendering process and supervise the project implementation based on the detail drawings and tender documents.

The scope of work for the consultant is as follows:

1. Detail design
Preparation of tender documents for the procurement of equipment.
2. Promoting the processes of bidding and signing of the procurement contract
Determination of the type of the procurement contract, preparation of a procurement contract, examination of the contents of installation and instruction manual of the equipment, and selection of a Japanese corporation to procure the equipment (tender announcement, acceptance of tenders, evaluation of the tenders accepted, negotiation for the procurement contract and witnessing the signing of the procurement contract).
3. Examination and approval in process chart etc.
Inspection and approval of equipment specifications, working drawings, scheme of execution and

process chart, which are submitted by the Japanese corporation responsible for procurement of the equipment.

4. Reporting on the progress of work

Reporting on the progress of work to the project implementing organization and other related organizations.

5. Cooperation with payment approval procedures

Cooperation in the examination of details of the bills relating to remuneration for operations after shipping and payment procedures.

6. Other consulting services

Supervision and ad-hoc assistance from the beginning through to the completion of work.

(3) Japanese Corporation to Take Charge of Equipment Procurement

The procurement and the installation of equipment is to be carried out by a Japanese corporation (trading company) selected through bidding. The procurement corporation is selected by open bidding with participants having to meet the pre-qualification requirements.

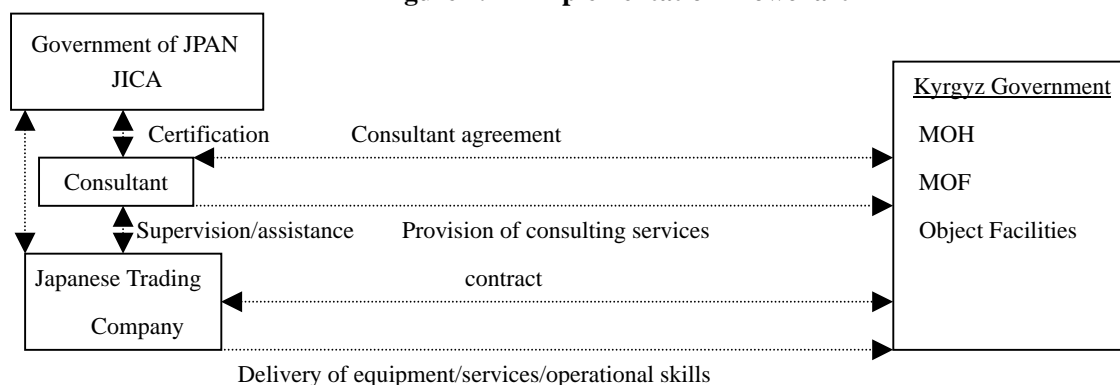
The Ministry of Finance of the Kyrgyz Republic will conclude the contract for procurement of the equipment with the selected Japanese corporation. The contract is required to be certified by the Government of Japan.

The procurement corporation is to take charge of manufacturing, supplying, transporting and installing equipment in accordance with the contract with the Ministry of Finance of the Kyrgyz Republic, and deliver the equipment after giving guidance on operation, maintenance and management.

(4) Japan International Cooperation Agency

The Japan International Cooperation Agency (JICA) is to direct the consultant firm and the Japanese corporation to take charge of equipment procurement to ensure that this project is implemented properly within the frame of grant aid cooperation of the Government of Japan. The agency is also to consult with the organization in Kyrgyz responsible for the implementation of this project on an ‘as required’ basis to expedite implementation.

Figure 2.1 Implementation Flowchart



2-2-4-2 Implementation Conditions

(1) Renovation of the objective facilities carried out by recipient country

One of the objective facilities, the Human Reproduction Center acting as the national gynecological center shall be renamed to the “National Center of Obstetrics and Gynecology” after the establishment of an obstetrics section.

The main renovation work of existing facilities carried out by the Kyrgyz side will be as follows:

1. Renovation of radiation diagnostic section

As there is no radiation diagnostic section in the facilities, it is required to repair the existing multipurpose room to the radiation room, the operation room and the darkroom.

2. Renovation of delivery room and operation room in the obstetrics department

There is a requirement to repair the existing area currently used as minor operation theatres and laboratory to delivery rooms and full operation theatres.

3. Upgrade of reanimation room and ICU

It is required to upgrade the existing area used as reanimation rooms to one reanimation room with five beds and three ICU rooms each with a single bed.

4. Other repairing work

It is required to renovate the existing diagnostic and treatment rooms in the gynecology department to accommodate rooms required for the new obstetrics department such as a labor room, NICU and new born baby room.

The above-mentioned renovation work should be completed before the equipment procured by this project be brought to the facilities. It is desirable that the Japanese consultant pay close attention to the budget, progress and status of renovations.

(2) Schedule, method and route for carrying of equipment into the facilities

As the objective facilities of this project are functioning hospitals the carrying of equipment into the facilities should not interrupt daily medical activities. Therefore it is required to confirm with each facility as follows:

1. Schedule, carrying route and location for the temporary storage of the equipment

2. Procedures for the installation of equipment

3. Schedule for the removal of existing equipment and installation of new equipment

It is most important and desirable to minimize the time lag between removal and installation of radiological equipment, autoclave, operating light etc. in order to not interrupt daily medical activities.

2-2-4-3 Scope of Works

The confirmation of the scope of work carried out by both the Japanese and Kyrgyz parties to accomplish this project smoothly is required.

The content is as follows:

Table 2.16 Scope of Works

Work to be performed by Japanese side	Work to be performed by Kyrgyz side
<p><i>1. Procurement of equipment</i> Equipment procured in accordance with procurement guidelines</p> <p><i>2. Installation of equipment</i> Equipment installed in accordance with guidelines following preparation of facilities</p>	<p><i>1. Removal of existing equipment</i> The removal of existing equipment being replaced by this project.</p> <p><i>2. Ensuring equipment movement</i> It is required to prepare areas (doorways, corridors etc) so that equipment can be moved into the facilities.</p> <p><i>3. Electricity, water supply, drainage, medical gas etc.</i> Preparation of necessary electricity, water, drainage, medical gas and other supplies for the equipment procured by this project.</p> <p><i>4. Renovation work in the facilities</i> Repair, paint, clean and arrange the rooms before the installation of equipment.</p> <p><i>5. Renovation of "Human Reproduction Center"</i> Complete renovation work in the new obstetrics department and other areas planned by Kyrgyz side before installation</p>

2-2-4-4 Consultant Supervision

The contracted Japanese consultant firm will confirm that the execution of the activities carried out by the procurement corporation is in line with the contract document and that all contractual obligations are complied with. Moreover, the consultant will guide, advise and assist the procurement corporation to ensure contractual compliance.

The content of the consultant's work is shown below.

(1) Assistance with Tender and Contract Processes

This involves the preparation of tender documents necessary to decide the procurement corporation, the tender notice, acceptance of applications for tender, screening of applicants, distribution of tender documents, acceptance of tenders and the evaluation of the contents of the tenders accepted.

In addition, the consultant advises and assists with the conclusion of the contract between the Ministry of Finance of the Kyrgyz Republic and the successful bidder.

(2) Supervision of Procurement

Supervision work includes examination/approval of equipment specification, supervision of loading/marine transport and inland transportation, guidance on and supervision of equipment installation, supervision of the work carried out by the Kyrgyz side, reporting on the progress of works and issuance of certificates.

The consultant is to attend the delivery of equipment after confirming that the equipment installation work is completed in compliance with the contract, and the service is only deemed completed after receipt and approval of the equipment procured and installation by the Kyrgyz side.

When the above-mentioned service is accomplished, the consultant is to report on the progress of the project, the payment procedures and the completion and delivery of the procured equipment to the Japanese government agencies concerned.

(3) Staff Supervision Requirements

The consultant firm's staff members' supervision requirements are shown below.

1. Project manager

The project manager is to be responsible for the supervision of consultant services and preparation of the tender documents.

2. Two staff members for the equipment plan

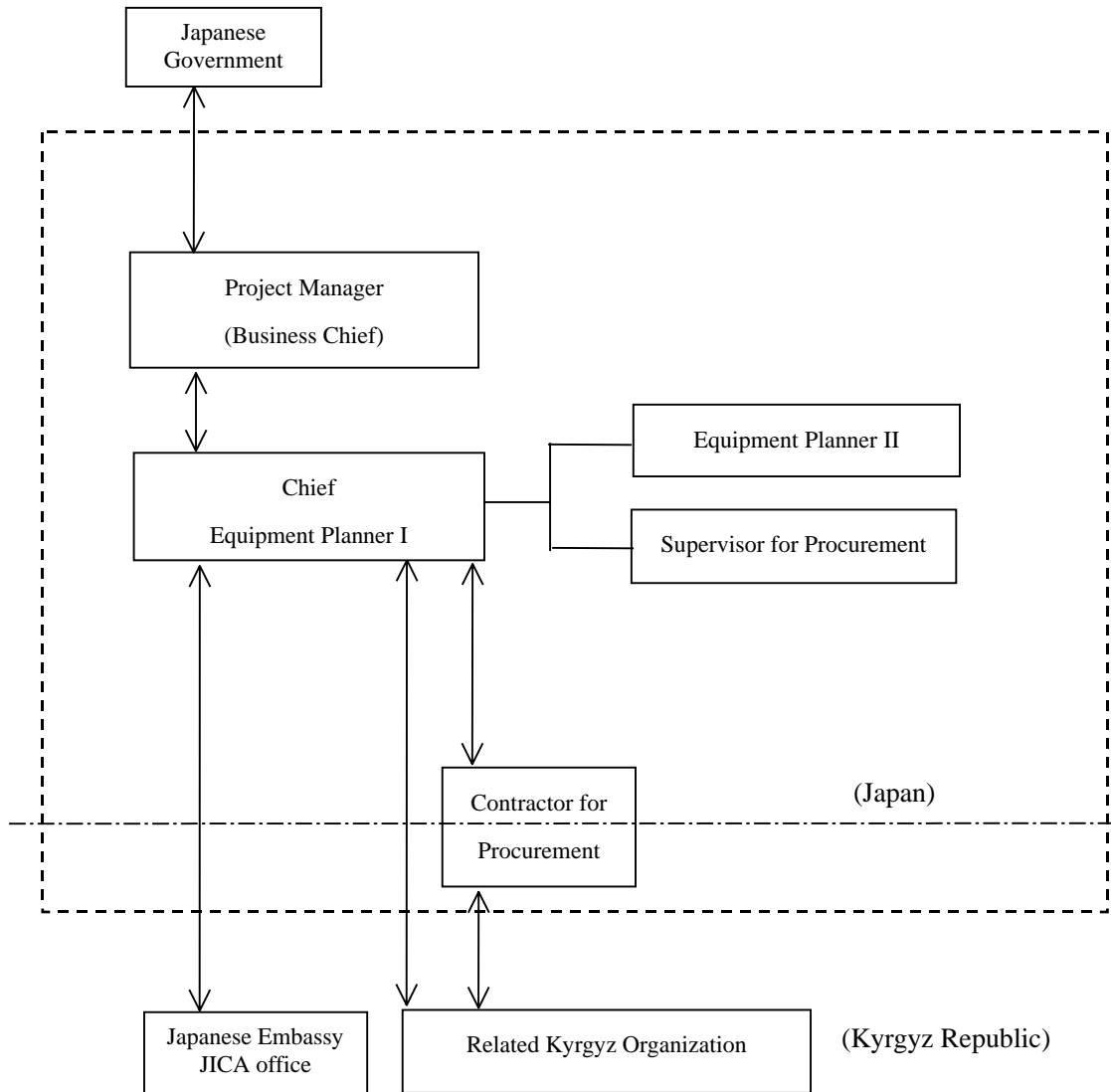
Hold responsibility for the verification of the equipment plan and supervision of the procurement plan.

3. One supervisor for procurement

Responsible for the supervision of procurement and installation of the equipment.

Figure 2 shows the system of the procurement of this plan.

Figure 2.2 System of Procurement



2-2-4-5 Procurement Plan

(1) Country of Equipment Procurement

In the Bishkek emergency center and other similar facilities which were the beneficiaries of former grant aid projects by the Government of Japan, the procured medical equipment is operated and maintained without trouble.

Because of the existence of local agencies that can service Japanese equipment, most of the equipment planned by this project is to be procured from Japan.

However, the procurement of third country products should be considered for the following equipment due to the ease of procurement for reagent and consumables and to avoid difficulties in securing fair bids on procurement limited to Japanese products.

1. Equipment not produced in Japan or banned from export to foreign countries even if produced (Raparoscorp and Hystero- Rezectoscorp, etc.)
2. Equipment for which there is a requirement for an agency in Kyrgyz or neighboring countries, because of the necessity of cheap and smooth procurement of reagent, consumables and spare parts, especially the clinical laboratory equipment.
3. Equipment produced in Japan however contains maintenance and operational difficulties caused by the absence of a local agent in Kyrgyz or neighboring countries.

2-2-4-6 Implementation Schedule

(1) Execution process

When this project is approved in the Cabinet Council of the Government of Japan and the governments of the two countries sign the Exchange of Notes, this project is to be implemented as follows:

1. Signing of the Exchange of Notes by the governments of the two countries.
2. Conclusion of the agreement for payment of funds by the Japanese side between the project implementing organization and the foreign exchange bank authorized by the Government of Japan (bank agreement).
3. Conclusion of the consultant agreement between the project implementing organization and Japanese consultant firm.
4. Issuance of the written payment authorization concerning the consultant agreement to the consultant firm by the organization implementing of project.
5. Certification of the above-mentioned consultant agreement and approval for payment of funds by the Government of Japan.
6. Preparation of tender documents by the consultant firm.
7. Approval by the project implementing organization for tender documents and preparations for bidding by the consultant firm.
8. Acceptance of tenders and evaluation of tenders accepted.
9. Conclusion of the contract for procurement of equipment between the project implementing organization and Japanese corporation.

10. Certification of the above-mentioned contract by the Government of Japan.
11. Issuance of written payment authorization concerning the contract to the procurement corporation by the project implementing organization.
12. Approval for equipment manufacturing/shop drawings (examination and approval of the equipment specifications submitted by equipment supplier, necessary inspections and guidance, arrangements to smooth the progress of the project by close contact with the Ministry of Health on an as needs bases.)
13. Attendance of equipment inspections (The consultant is to attend pre-shipment equipment inspections and approve them on behalf of the Ministry of Health on an as needed basis.)
14. Supervision of work (The consultant is to examine and approve the equipment specifications, to inspect the equipment, to supervise inland equipment transportation, to guide and supervise equipment installation, and to supervise the work carried out by the Kyrgyz side in accordance with the consultant agreement.)
15. Management of work progress (The consultant is to manage the progress of work and to instruct the procurement corporation to complete the procurement of equipment within the term as specified in the Exchange of Notes.)
16. Completion inspections and trial operation (The consultant is to inspect the installation and the trial operation of the equipment procured to ensure the each item of equipment functions as indicated in the specifications and to submit the certificate of completion of inspections to the responsible organization of the implementation.)
17. Completion and delivery

(2) Period of Implementation

The time frames for project implementation by the Japanese side after the signing of the Exchange of Notes are as shows in the following table.

Table 2.17 Project Implementation Period

Work contents		Period
Detail	1. Contracting of consultant, Discussion on detail design	0.5 months
	2. Detail design, Preparation of tender documents	1.0 months
	3. Approval for tender documents	1.5 months
	4. Tendering, Contract, Certification	2.0 months
Procurement	1. Manufacturing of equipment	3.5 months
	2. Transportation	2.0 months
	3. Installation (Trial operation, adjustment, guidance/training on operation/ maintenance manual, delivery, certification)	1.5 months
Total		12.0months

Table 2.18 Progress Time Line

	1	2	3	4	5	6	7	8	9	10
Detail Design	Consultant Agreement & Discussion of Detail Design									
	Detail Design & Preparation of Tender Documents									
	Approval of Tender Documents									
	Tendering, Contract & Verification (5.0 months)									
Procurement of Equipment	Manufacturing									
	Pre-shipment Inspection & Shipping									
	Transportation									
	Installation, Test Operation									
	Inspection, Hand Over (7.0 months)									

2-3 Obligations of Recipient Country

2-3-1 Obligations

Main items borne by Kyrgyz are as follows:

(1) Human Reproduction Center (Bishkek)

1) Outline

For the Power receiving/transforming facility, it is possible to afford the power capacity for the expanded equipment on the second power distribution board.

Branching of piping is possible for air conditioning facility and water supply/drain facility.

Therefore, the renovation work will be mainly based on each room in the facility.

2) Work in each room

1 X-ray unit installation room on the first floor

(Details)

Installation of X-ray shielding and ventilation facility to accompany introduction of X-ray equipment, renovation of power facility and water supply/drain facility.

- X-ray shield installation on a wall
- X-ray unit based installation
- Wiring of power cables for X-ray unit

Three-phase power is supplied from the power distribution board in the autoclave room across the hall.

- Branching of water supply pipes (including installation of valves)

Water supply work for the automatic development unit and branching from water supply pipes installed in the preceding room

2 Autoclave room on the first floor

(Details)

Renovation of power facility to accompany introduction of an adjacent X-ray unit and renovation of ventilation facility in accordance with the renewal of two autoclave units will be performed. For drainage, a high pressure and direct drainage to outside needs installation of an external drainage measure.

- Opening expansion work
- Foundation work
- Removal and renewal of exhaust fan

An exhaust duct rising from the floor (300mm in dia.) is available but an exhaust fan is not operating. So the exhaust fan is removed and renewed.

- Modification to the power distribution board

Perform power supply work for 1 above.

- Installation of grain pipes and drainage measure

3 Laundry on the first floor

(Details)

Facilities required in accordance with the renewal of laundry equipment (such as electricity wiring and water supply pipes) will be addressed in the existing facilities. The remote control panel is to be renewed to one to suit the power capacity of the equipment.

- Foundation work for laundry equipment
- Renewal of remote control panel
- Branching of water supply pipes (including installation of valves)

4 Operation rooms on the second floor: Large/Small operation rooms

(Details)

Renovation work to accompany renewal of three non-shading lights is to be addressed in the existing facility. The remote control panel is to be renewed to one to suit the power capacity of the equipment.

- Renewal of remote control panel

(2) Naryn Oblast Merged Hospital for Obstetrics and Gynecology (Naryn)

1) Outline

For the Power receiving/transforming facility, it is necessary to add a transformer in accordance with the expansion of autoclave. Branching of piping is required for air conditioning facility and water supply/drain facility. For drainage of autoclave section, a high pressure and direct drainage to outside needs installation of an external drainage measure.

2) Work in each room

1 Expansion of transformer

2 Autoclave room on the first floor (Restaurant on the first floor of the current surgery ward)

(Details)

Renovation of power facility and water supply/drain facility in accordance with the renewal of two autoclave units

- Expansion of power board and remote control panel

Direct power feeding from an external transformer

- Branching of water supply pipes (including installation of valves)
- Installation of water drain pipes and drainage measure

3 Laundry on the basement floor

(Details)

Renewal of facilities in accordance with the renewal of laundry unit will be addressed in the

existing facilities. The remote control panel is to be renewed to one to suit the power capacity of the equipment. The opening for carry-in is narrow and requires expansion work.

- Foundation work for laundry equipment
- Renewal of remote control panel

(3) Issyk-Kul Oblast Merged Hospital (Kara-Kol)

1) Outline

Branching of water supply pipes for air conditioning facility and water supply/drain facility is made.

2) Work in each room

1 Operation room :Large/Small operation rooms

(Details)

Renovation work to accompany renewal of three non-shading lights is to be addressed in the existing facility. The remote control panel is to be renewed to one to suit the power capacity of the equipment.

- Renewal of remote control panel

2 X-ray unit room (B ward, first floor)

(Details)

Renovation work to accompany renewal of equipment is to be addressed in the existing facility. The remote control panel is to be renewed to one to suit the power capacity of the equipment.

- Renewal of remote control panel
- Foundation work for X-ray unit
- Water supply/drain pipe branching work (including installation of valves)

3 Laundry (G ward, first floor)

(Details)

Renewal of facilities in accordance with the renewal of laundry unit will be addressed in the existing facilities. The remote control panel is to be renewed to one to suit the power capacity of the equipment. The opening for carry-in is narrow and requires expansion work.

- Opening expansion work
- Foundation work for laundry equipment

4 Autoclave room (V ward, first floor)

(Details)

Renewal of facilities in accordance with the renewal of autoclave unit will be addressed in the existing facilities. The remote control panel is to be renewed to one to suit the power capacity of the equipment. For drainage, a high pressure and direct drainage to outside needs installation of an external drainage measure.

- Renewal of remote control panel
- Branching of water supply pipes (including installation of valves)
- Drain pipe connection work

5 Operation rooms (V ward, third floor): Large/Small operation rooms
(Details)

Renovation work to accompany renewal of three non-shading lights is to be addressed in the existing facility. The remote control panel is to be renewed to one to suit the power capacity of the equipment.

- Renewal of remote control panel

(4) Talas Oblast Merged Hospital (Talas)

1) Outline

The hospital is under construction so that the electricity and water supply/drain facilities are not yet installed. Although there is no document as an evidence because no drawings are available, it is confirmed verbally that the water supply/drain facilities and illumination and outlets will be provided in each room. Based on this information, the following work is required.

2) Work in each room

1 X-ray unit room

(Details)

Work is complete up to interiors. Power distribution board, cable wiring and X-ray shielding work are necessary. Thus construction work and facility work will be carried out.

- Installation of power board and remote control panel
- Foundation work for X-ray unit
- X-ray shielding work

2 Laundry

(Details)

Renewal of facilities in accordance with the renewal of laundry unit will be addressed in the existing facilities. The remote control panel is to be renewed to one to suit the power capacity of the equipment.

- Renewal of remote control panel
- Foundation work for laundry equipment
- Branching of water supply pipes (including installation of valves)

3 Autoclave room

(Details)

The opening for carry-in is narrow and the power capacity supplied to the installation site is small.

Thus construction work and facility work will be carried out. Installation of power distribution board necessary for supplying power and installation of wiring are required in accordance with installation of autoclave unit. For drainage, a high pressure and direct drainage to outside needs installation of an external drainage measure.

- Carry-in opening expansion work
- Renewal of remote control panel
- Branching of water supply pipes (including installation of valves)
- Installation of grain pipes and drainage measure

2-3-2 Expenses borne by the Government of Kyrgyz Republic

Costs borne by Kyrgyz are as follows.

Table 2.19 Costs Borne by Kyrgyz

Operation item	Details	Cost
1. Human Reproduction Center	Renovation work to accompany expansion of obstetrics and department and procurement of equipment	2,100 thousand soms
2. Naryn Oblast Merged Hospital	Renovation work to accompany procurement of equipment	370 thousand soms
3. Issyk-Kul Oblast Merged Hospital	Renovation work to accompany procurement of equipment	80 thousand soms
4. Talas Oblast Merged Hospital	Renovation work to accompany procurement of equipment	860 thousand soms
Total construction cost		3,410 thousand soms (Approx. 9,548 thousand yen)

(3) Estimation conditions

- 1) Time of estimation March 2002
- 2) Exchange rate 1US\$=132.00 yen
 1 som=2.8 yen
- 3) Construction period Period required for implementation design, equipment procurement and construction will be 12.0 months
- 4) Miscellaneous Operation addressed by this project shall be implemented in accordance with the Japanese grant aid project.

2-4 Project Operation/Maintenance Project

Kyrgyz has made efforts to reduce the number of beds and staff members in order to implement an efficient medical care service system. Of the objective facilities of this project, 1) Human Reproduction Center (National Obstetrics and Gynecology Center) will increase the number of beds from 70 to 108 in accordance with the expansion of the obstetrics department, thus requiring additional staff. For the remaining three oblast merged hospital obstetrics and gynecology departments, reduction of beds across the hospital is planned and accordingly the staff may be reduced but a situation where staff cannot be reserved due to shortage of human resources is beyond imagination.

The Human Reproduction Center as a national hospital is under the control of the Ministry of Health. Naryn Oblast Merged Hospital, Issyk-Kul Oblast Merged Hospital, and Talas Oblast Merged Hospital are under the control of the Ministry of Finance. Each hospital acquires an annual budget from respective controlling authority. Kyrgyz has made efforts to give different levels of treatment in the market to medical equipment manufacturers depending on their services in order to improve the maintenance and procurement of consumables thereby making those manufacturers compete with each other. Each agency dispatches maintenance staff to a training course in a manufacturer's plant and acquires the written maintenance permission in Kyrgyz to provide services.

Kazakhstan, a neighboring country has been developed remarkably. A great number of medical equipment agencies are found in Kazakhstan. In case services are unsatisfactory in Kyrgyz, the user may contact an agency in Kazakhstan to enjoy better services. In the City of Bishkek, there is a medical equipment service center called Meditechnica, a department of the former Ministry of Health now being a private company. This company performs maintenance of all the medical equipment and training of staff. The company, although it is a private company, serves as part of the ministry of Health and provides services across the entire Republic.

(1) Human Reproduction Center

1) Procurement of consumables and spare parts

The Human Reproduction Center as a national hospital is under the control of the Ministry of Health. The center proposes a next-year purchase plan at the year end. Then budget is fixed and purchase source determined. Purchase of consumables and reagents is made through a trading company which participated in and won the bidding for the consumables and reagents for a period of a year. Allotment within the budget is determined by the Human Reproduction Center so that another delivery destination is determined in case there are consumables and reagents which are hard to be procured. Currently, examples of such consumables and reagents are those used for inspection of chromosomes.

Consumables and spare parts are procured as required from a trading company which won the bidding when the stock is running short in each department. The Human Reproduction Center is located in the Bishkek City and on-site investigation shows that procurement is smooth without problems.

2) Maintenance system

Since the Human Reproduction Center is a national hospital, dedicated maintenance staff are not

resident. In general, a user has participated in the equipment use training and thus has some degree of knowledge. In case maintenance should be necessary, the user makes a requests to a surgical hospital or Meditechnica.

Even in case there is no equipment which needs repairs, medical equipment check is made by maintenance staff at least once an year. This is specified as a national standard. The check fee is directly paid by the hospital out of the annual maintenance cost reserved every year.

(2) Naryn Oblast Merged Hospital, Issyk-Kul Oblast Merged Hospital, and Talas Oblast Merged Hospital

1) Procurement of consumables and spare parts

Consumables and spare parts are requested of a director in the administration office of an oblast hospital twice a month. Then the procurement staff of the hospital carries the procurement lists across the hospital to Bishkek for purchase of consumables and spare parts. From application to procurement of consumables, it basically takes a couple of days although it takes one or two weeks depending on the article. Reagents or inspection kits in an inspection room are assigned the number to be procured depending on the state of exhaustion. Transportation from Bishkek to each facility is basically made in room temperatures because the average temperature is relatively low. Since this region enjoys cool climate throughout the year, so that it is confirmed that there have been no problems in transportation.

The budget is adjusted every year in the administration office.

2) Maintenance system

One or two medical equipment maintenance technicians are resident in each oblast hospital for maintenance of the entire hospital.

The medical equipment maintenance technicians have a long experience in the medical equipment maintenance center in the Soviet Union era (current Meditechnica) and understands all medical equipment currently available. Whenever new equipment is introduced, the medical equipment maintenance technicians participate in a training course in the maintenance center in Bishkek in order to acquire new techniques.

(3) Operation/Maintenance Costs

The “Joint payment System” which incorporates the forced medical insurance and the patient’s bearing of part of the medical cost and the batch settlement system started in 2001 in Issyk-Kul Oblast Merged Hospital, on March 1, 2002 in Naryn and Talas Oblast Merged Hospitals, and July 1, 2002 in the Human Reproduction Center in Bishkek City.

As mentioned above, the allotted national budget could not afford the costs necessary for maintain the medical consumables and equipment required for medical treatment under the previous medical cost payment system and the cost was virtually borne by individual patients. According to the new “joint payment system,” as understood from the example of Issyk-Kul Oblast Merged Hospital, the cost corresponds to the total of the forced medical insurance fund and the cost borne by the patient.

Table 3-5-2 lists medical care activities using equipment procured in this project in 2005 for each

objective facility, sum of the corresponding medical consumables and maintenance cost (mainly spare parts) as well as the forced medical insurance fund including the hospitalization cost for the medical care activities and the amount paid by the patient, for the four facilities.

In case health care activities are made using the procured equipment, operation/maintenance cost of the equipment is almost covered by the insurance fund and amount paid by the patient on a per medical activity basis, so that maintenance after execution of the project will encounter no troubles.

Table 2.20 Maintenance Cost of the Procured Equipment and Its Resource of Revenue (som)

		Human Reproduction Center			Naryn Oblast Merged Hospital			Issyk-Kul Oblast Merged Hospital			Talas Oblast Merged Hospital		
		Medical care fee			Medical care fee			Medical care fee			Medical care fee		
		Amount borne by Government	Borne out of pocket+Insurance fund	Maintenance cost	Amount borne by Government	Borne out of pocket+Insurance fund	Maintenance cost	Amount borne by Government	Borne out of pocket+Insurance fund	Maintenance cost	Amount borne by Government	Borne out of pocket+Insurance fund	Maintenance cost
Maintenance cost	Medical care consumables cost			4,453,300			1,258,650			1,216,596			1,421,493
	Spare parts cost			177,230			35,413			21,060			37,433
	Total 1			4,630,530			1,294,063			1,237,656			1,458,926
Outpatient medical care fee	Amount borne by the patient		1,102,974			398,405			387,540			386,675	
	Amount borne by the insurance fund		559,241			192,993			193,770			193,338	
	Amount borne by Government	559,241			192,993			193,770			187,838		
	Total 2	559,241	1,662,215		192,993	591,398		193,770	581,310		187,838	580,013	
Inpatient medical care fee	Amount borne by the patient		1,495,002			473,600			577,200			592,000	
	Amount borne by the insurance fund		1,744,169			236,800			288,600			296,000	
	Amount borne by Government	1,744,169			1,165,500			2,020,200			2,072,000		
	Total 3	1,744,169	3,239,171		1,165,500	710,400		2,020,200	865,800		2,072,000	888,000	
Grand total	2,303,410	4,901,386	4,630,530	1,358,493	1,301,798	1,294,063	2,213,970	1,447,110	1,237,656	2,259,838	1,468,013	1,458,926	
		7,204,796			2,660,291			3,661,080			3,727,851		