

NO.

**BASIC DESIGN STUDY REPORT
ON
THE PROJECT
FOR
IMPROVEMENT OF OBSTETRICAL SERVICE
IN THE REPUBLIC OF ARMENIA**

December 2004

**JAPAN INTERNATIONAL COOPERATION AGENCY
ICONS INTERNATIONAL COOPERATION Inc.**

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PREFACE

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

JICA sent to Armenia a study team from June 23 to July 21, 2004.

The team held discussions with the officials concerned of the Government of Armenia, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Armenia in order to discuss a draft basic design, and as this result, the present report was finalized.

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

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

December, 2004

Seiji Kojima
Vice-President
Japan International Cooperation
Agency

December, 2004

Letter of Transmittal

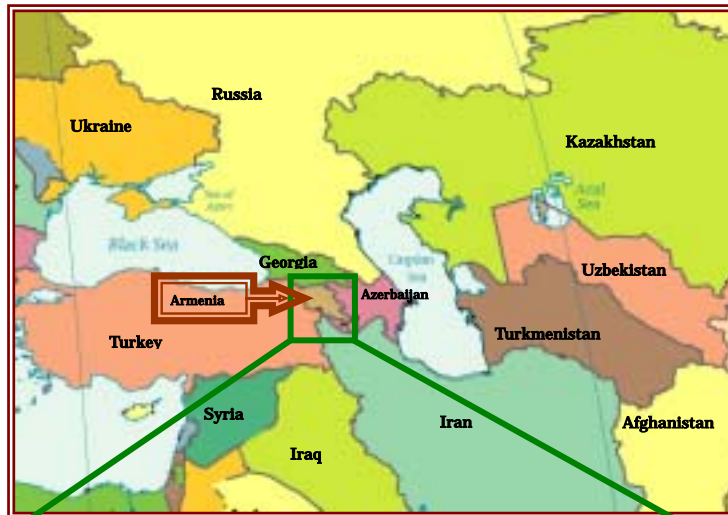
We are pleased to submit to you the basic design study report on the Project for Improvement of Obstetrical Service in the Republic of Armenia.

This study was conducted by ICONS International Cooperation Inc., under a contract to JICA, during the period from June, 2004 to December, 2004. In conducting the study, we have examined the feasibility and rationale of the project with due consideration to the present situation of Armenia and formulated the most appropriate basic design for the project under Japan's grant aid scheme.

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

Very truly yours,

Yoshiharu Higuchi
Project manager,
Basic design study team on the Project for
Improvement of Obstetrical Service in the Republic
of Armenia.
ICONS International Cooperation Inc.



Map of Target Hospital

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Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
AMD	Armenian Dram
BBP	Basic Benefit Package
CE	CE Mark
CFC	Chlorofluorocarbon
CIS	Commonwealth of Independent States
CPOG	Center of Perinatology, Obstetrics and Gynecology
E/N	Exchange of Notes
EBM	Evidence-Based Medicine
ECG	Electro Cardio Graph
EU	European Union
EURO	European currency
GDP	Gross Domestic Product
GNI	Gross National Income
GOST	State Committee of Russian Federation for Standardization and Metrology
HIV	Human Immunodeficiency Virus
ICU	Intensive Care Unit
IMF	International Monetary Fund
ISO	International Organization for Standardization
IVF	In Vitro Fertilization
JICA	Japan International Cooperation Agency
JIS	Japan Industrial Standards
LDR	Labor, Delivery, Recovery
M/D	Minutes of Discussion
NICU	Neonatal Intensive Care Unit
PHC	Primary Health Care
PRSP	Poverty Reduction Strategy Paper
TB	Tuberculosis
UN	United Nations
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
U.S.	Ultrasound Scanner
USD	U.S.Dollar
WB	World Bank
WHO	World Health Organization

Summary

Summary

The Republic of Armenia (hereafter “Armenia”) is situated in the southwestern part of the Trans-Caucasus. It is a land-locked country bordering northeast Turkey to the west, Iran to the south, Azerbaijan to the east, and Georgia to the north. With a landmass of 29,800 km², Armenia is the smallest of the CIS countries and roughly 1/13 the size of Japan.

The population of Armenia in 2003 was 3,210,000, however the stream of people emigrating implies that 3 million may be a more accurate figure. 90% of the population is made up of native Armenians, with the remaining 10% comprising mainly Russians, Azerbaijani and Kurds. The country consists of 11 administrative districts - including the capital Yerevan - known as “marz”.

Caused by the major earthquake in 1988, independence in September 1991, the dissolution of the Soviet Union in December of the same year, the conflict with neighbouring Azerbaijan centering on Nagorno Karabagh saw Armenia’s economy freefall with GDP in 1993 falling to 53.1% that of 1991. A ceasefire agreed with Azerbaijan in May 1994 saw a return to economic stability and a comprehensive program of structural reform. The IMF and World Bank began to provide economic and technical aid, focused on Armenia’s power plants and food industries, helping Armenia to experience the fastest transformation to positive growth of all the CIS countries in 1994. Yet, while macro economic indicators look comparatively healthy, with mining and agricultural production as the pillars of growth, there continues to be a large trade deficit and insufficient tax revenue has led to a government budget deficit. Loans from international donors are ongoing in order to fund the deficit.

The Republic of Armenia offered a high quality medical health service during the time of the Soviet Union, however the collapse of the Soviet Union and subsequent worsened economic conditions and changes to the social system have caused a remarkable decline in its quality. In such condition, the Armenian government has responded by drawing up a “National Health Policy for the Republic of Armenia 2004 - 2015” which sets out a number of reforms to the health system. Therefore, this decline in medical health services is reflected in the overall health of the general population, and in particular in the health of the vulnerable members of society women and

children. According to Ministry of Health statistics, the 2003 maternal mortality rate was 19.2 per 100,000 births while the infant mortality rate for 2003 was 12.0 per 1000 births levels 2 ~ 4 times higher than the EU country average.

The target sector of the Project, mother and child health has been established as a priority in the health policy of the Poverty Reduction Strategy Paper (hereafter: PRSP) formulated in 2003. The tertiary medical facility, Center of Perinatology Obstetrics and Gynecology (hereafter: CPOG), and the secondary medical facility, Maternity Houses bear a large responsibility for perinatal healthcare services in Armenia. Perinatal diagnosis is free for the registered pregnant women under the State “Basic Benefit Package” program (hereafter: BBP program). Since based on WHO guidelines, the Ministry of Health recommends to have a minimum of four perinatal diagnosis prior to birth, in addition, delivery rate in medical facilities is relatively high (99% in urban areas and 84% in rural areas), much of the equipment at these facilities is obsolete and they are struggling to offer appropriate perinatal healthcare service. Furthermore, state financial difficulties make it unlikely that this equipment can be replaced.

Taking this into account, Japanese Grant Aid has been requested by Armenian government with the objective of improving perinatal healthcare services at target hospitals. This is to be achieved through the procurement of medical equipment of obstetric field at CPOG, Gavar and Hrazdan Maternity House. In response to the request of Armenian government, the Japanese government decided to conduct a Basic Design Study and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent to Armenia a study team from 23 June to 21 July 2004. Upon their return to Japan, draft report was drawn up based on the results of the field survey, technical examination and discussion with those on the ground in Armenia. The components of draft report was explained and consulted with Armenian side from 21 September to 5 October.

The Project has designated three target facilities, all bases for activities under a preceding Technical Cooperation Project (Armenia Reproductive Health Project). The three facilities are CPOG, Gavar Maternity House and Hrazdan Maternity House. Items of equipment for procurement for the target hospitals have been selected with due

consideration to factors such as their beneficial effects, anticipated length of sustainable use, installation environment, operation and maintenance skill. The basic policy has been to identify equipment and the its quantities needed by the target hospitals, focusing mainly on the replacement of existing old equipment, but also with consideration given to the activities of other donors, and especially the potential synergetic effects of ties with a Technical Cooperation Project that has the aim of improving perinatal healthcare services and strengthening a referral system.

As a result, 45 items of equipment (207 pieces) for the diagnostic, obstetric, surgical, neonatal, ICU and laboratory departments of CPOG. And 22 items of equipment (Gavar Maternity House: 34 pieces, Hrazdan Maternity House: 36 pieces) for the diagnostic, obstetric, neonatal and ICU departments will be procured.

See for table overview of equipment to be provided

Equipment List for CPOG

No.	Equipment	Procuring Qty.	No.	Equipment	Procuring Qty.
1	U.S (Color Doppler) with Necessary Probes	2	23	Obstetrical Bed (LDR type)	4
2	Fetal Doppler	5	24	Infant Warmer	9
3	ECG	3	25	Fetal Monitor	2
4	Colposcope with Camera	2	26	Electronic Weight Scales for the Newborn	6
5	Scales for Adult (Weight and Height)	3	27	Gynecological Examination Chair	4
6	Sphygmomanometer with Infant and Adult Cuff	6	28	ICU Bed	6
7	Biochemical Analyzer	1	29	Patient Monitor for ICU	6
8	Coagulometer	1	30	Infusion Pump (syringe type)	22
9	Electrolytes Analyzer	1	31	Ventilator	1
10	Refrigerator for Drug Storage	1	32	Infant Incubator	5
11	Refrigerator for Blood Storage	1	33	Transport Infant Incubator	2
12	Plasma Freezer	1	34	Patient Monitor for NICU	3
13	Examination Lamp	5	35	Pulse Oximeter	2
14	Operation Table	3	36	Phototherapy Unit	2
15	OT Lamp	2	37	Bilirubin Meter	2
16	Patient Monitor for OT	2	38	Emergency Care Set for NICU	2
17	Anesthetic Unit	3	39	Infant Ventilator	1
18	Electrosurgical Unit	3	40	Steam Sterilizer	2
19	Instrument Set for Obstetric Surgery	2	41	Hot Air Sterilizer	5
20	Laparoscope Set	1	42	Washing Machine	1
21-1	Suction Unit for OT	4	43	Ironer	1
21-2	Suction Unit (Low pressure type)	3	44	Two Crank Bed	30
22	Stretcher	4	45	Bassinet	30

Equipment List for Gavar and Hrazdan Maternity House

No.	Equipment	Procuring Qty.		No.	Equipment	Procuring Qty.	
		Gavar	Hrazdan			Gavar	Hrazdan
1	U.S (B/M Mode) with Necessary Probes	1	1	12	Infant Warmer	2	2
2	Mobile U.S with Convex Probe	1	1	13	Infant Incubator	2	2
3	Fetal Doppler	3	3	14	Patient Monitor for NICU	1	1
4	ECG	1	1	15	Infusion Pump (syringe type)	6	6
5	Sphygmomanometer with Infant and Adult Cuff	2	3	16	Phototherapy Unit	1	1
6	Operation Table	1	1	17	Bilirubin Meter	1	1
7	Anesthetic Unit	1	1	18	Electronic Weight Scales for the Newborn	1	1
8	Pulse Oximeter	1	1	19	Emergency Care Set for NICU	1	1
9	Instrument Set for Obstetric Surgery	1	1	20	Gynecological Examination Chair	2	2
10	Obstetrical Bed (LDR type)	2	2	21	Patient Monitor for ICU	1	1
11	Fetal Monitor	1	1	22	Steam Sterilizer (Vertical)	1	2

A total period of 10 months is requisite to complete the objectives of this Project where the objectives will be carried out by the Japanese government through Grant Aid. Total costs are estimated at approximately JPY 209 million (Japan: JPY 209 million, Armenia: USD 300).

The operation and maintenance budget incurred by the Project will be met by hospital budgets from their main income sources; payment of diagnosis fees from the BBP program indemnified by state budget for perinatal diagnosis, deliveries etc. as well as from the participation paid by patients for healthcare service falling outside of the BBP program.

Costs of operation of equipment generally include purchase of consumable, maintenance, and power consumption. However, since precedence is given here to the procurement of basic medical equipment, there will be little in the way of necessary maintenance or power consumption costs. Furthermore, since much of the equipment is set to replace existing old equipment, some of these costs will be reduced. The total expenses to be financed by each hospital for the operation and maintenance of new equipment as a proportion of average annual expenditure for the years 2000 ~ 2003, gives the modestly addition of CPOG (2.2%), Gavar Maternity House (3.6%), and Hrazdan Maternity House (2.6%). Given the current improved state of hospital finances and financing through the state budget of the BBP Program (with its focus on the mother and child healthcare sector), as well as it can be expected that equipment will augment the efficient operation in the hospitals and the numbers of patients, the

budgetary allowance for running costs brought about by the Project is without problems.

Furthermore, since the Project plans to procure equipment from manufacturers with local service agents in Armenia or neighboring countries, we can expect a smooth and inexpensive supply of spare parts and consumable. Operation of equipment to be supplied under this Project is considered relatively uncomplicated, and the target hospitals have experienced and qualified medical staffs to use the equipment. Moreover, all target hospitals plan to put in place the appropriate personnel or training for efficient use of the equipment after procurement, therefore use of the equipment post procurement is not thought to be a problem.

As the target hospitals include CPOG, the tertiary medical facility of the mother and child healthcare sector, which accepts all pregnant women across Armenia, the target beneficiaries of the Project will be the 933,000 women of child-bearing age nationwide (15 ~ 49 years) and the approximately 42,000 newborns (2003 statistics), hence the resultant benefits felt will be far-reaching. Furthermore, each target hospital is planned a Technical Cooperation Project, involving specialists to be dispatched in order to improve the safety and quality of pregnancy and births. Through cooperation with the Project, synergistic effects are to be expected in improved perinatal healthcare service and strengthened a referral system between the hospitals in the field of mother and child healthcare.

1) Direct Effects

- Providing a high quality perinatal diagnostic system at each target hospital.
- Increasing numbers of obstetric and gynecology patients and registered pregnancies through an improved perinatal healthcare service at each target hospital.
- Early diagnosis and treatment of abnormality during the perinatal period through improved perinatal diagnostic function at each target hospital and function of CPOG, as the top referral hospital in mother and child health sector.
- Reduction of neonatal mortality rates through promoting safe births and increasing lifesaving rates of neonates at each target hospital.

2) Indirect Effects

- Expected reduction of maternal, neonatal, and perinatal mortality rates at national level.
- Benefit to domestic and foreign medical students due to CPOG's improved function as a medical educational institution.

The following recommendations are proposed too ensure the smooth realization of this Project, the smooth application of the newly procured equipment by the target facilities and the achievement of initial object:

• **Stability of healthcare finance**

The free health program in the mother and child healthcare sector – including the target sector of this Project – is financed by the BBP budget of the State Health Agency, and paid for through allocation of the State budget. At present, the Ministry of Health is trying to stabilize the BBP program and there is a possibility that future BBP program costs from the state budget will rise. In the long term, however, under the constraints of a weak economy and a fragile state budget, ensuring a separate revenue stream via the introduction of a public health insurance system will be vital. It is important not just to increase annual medical revenues, but also to create a system whereby limited finances are utilized in the most efficient way, with a higher portion of the public health budget being allotted to the crucial PHC level. Stabilization of the BBP Program and the introduction of a future public health insurance system will allow many women and children greater access to treatment. Moreover, free operations in neonatal medical service and for congenital disorders, both incurring high costs, may contribute to a reduction in the infant mortality rate.

• **Cooperation with PHC projects funded by other donors**

As the field of mother and child healthcare is prioritized in the national health policy, The Project – with its target of secondary and tertiary hospitals – has a complementary relationship with ongoing aid projects from the World Bank and UN institutions, which focus mainly on PHC level medical institutions. On account of

enabling the effect of this Project more effectible and sustainable, Cooperation with projects undertaken by the above donors such as 1) equipment procurement and facility renovation, 2) provision of a public health information system including the creation of an information network across each medical facility, and improvement in reliability of medical statistics, and 3) assistance of fostering and retraining medical staff/rigorous, will be vital. However, donor coordination is not enough to be effective at present. Exchange of ideas and information regarding cooperation between donors, leading by Department of International Relations of Ministry of Health – has function of donor coordination, will not only render The Project more effective, but will bring further improvements to the quality of Armenia's mother and child healthcare service.

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Chapter 1

Background of the Project

Chapter 1 Background of the Project

The Armenian medical health sector offered a high quality medical health service during the time of the Soviet Union, however the collapse of the Soviet Union and subsequent worsened economic conditions and changes to the social system have caused a remarkable decline in quality. This decline in medical health services is reflected in the overall health of the general population, and in particular in the health of the weaker members of society – women and children. According to Ministry of Health statistics, the 2003 maternal mortality rate was 19.2 per 100,000 births while the infant mortality rate for 2003 was 12.0 per 1000 births – levels 2 - 4 times higher than the EU country average. The Armenian government has responded by drawing up a “National Health Policy for the Republic of Armenia 2004 - 2015” which sets out a number of reforms to the health system with the aim by 2015 of reducing maternal mortality and infant mortality rates to one third of their current levels.

(1) Healthcare Situation and Hospital Structure

Healthcare in Armenia is suffering from deficient maintenance of facilities and equipment, lack of daily necessities and medicines, and low wages of healthcare staff. These problems have occurred for a number of reasons, among them the painful transition from a socialist economy to a market economy, the slowness to rid the country of the Soviet style healthcare system, disputes with neighboring countries and the occurrence of the major earthquake in northwestern Armenia in 1988. The consequent erosion of public trust in medical institutions, avoidance of medical treatment, low motivation and insufficient modern education of healthcare workers have resulted in conditions of worsening health and sanitation. The expanding gap between the level of healthcare service in urban areas, where medical institutions are concentrated, and in the regions poorly supported by medical institutions is also worthy of note.

(2) Mother and Child Healthcare Situation

• Maternal Mortality

According to Ministry of Health statistics, the Armenian maternal mortality rate worsened in 2003 to 19.2 deaths per 100,000 births, still lower than the CIS country

average but 3 - 4 times higher than that of EU countries. The main causes for these high numbers are obstetric bleeding, septicemia, abortion and infectious disease. Additional reasons are 1) the shortage of well trained midwives, 2) the lack of facilities and equipment for mother and child healthcare and 3) the length of time it takes for people to reach a medical institution.

• **Infant Mortality**

The infant mortality rate in 2003 was 12.0 per 1,000 births, far higher than the EU country average. Main causes of death were respiratory disease and congenital abnormalities. Between 1996 and 2000, an average of 54% of infant deaths (0 ~ 1 years) were concentrated in the neonatal age group (delivery ~ 28 days). Meanwhile, the perinatal mortality rate (22 week pregnancy ~ 7 days after birth) an indicator of the safety of births was higher than CIS and EU averages. Not only is appropriate treatment necessary at the time of delivery, there is also a need for comprehensive measures to step up perinatal examinations and to widen understanding of safe births in perinatal term healthcare at primary healthcare (PHC) level.

• **Perinatal Examination and Place of Delivery**

In Armenia, perinatal and postnatal examinations are free under the State BBP Program. Based on WHO guidelines, the Ministry of Health recommends for women with low risk pregnancies to have a minimum of four perinatal diagnosis prior to birth (women in high risk categories a minimum of eight times). In 2000, 64.7% of pregnant women received four or more diagnosis and 89% were examined at least once prior to birth. The study carried out by the Project at the target hospitals found that almost all registered pregnant women had been examined at least four times.

99% of pregnant women in urban areas and 84% in rural areas deliver their babies in medical facilities. Improvement of medical services in target facilities through the Project will contribute to better health of mothers and children during the perinatal period.

(3) Referral System of Mother and Child Healthcare

By looking at the level of medical service that each medical facility is able to provide, the Ministry of Health is clarifying the distinction between primary, secondary and tertiary

healthcare facilities.

CPOG in the capital of Yerevan is to be a tertiary healthcare facility, and a top level institution in the referral system for obstetrics and gynecology. As such, it is revising its provision of advisory support, emergency services and regional obstetric services to obstetrics and gynecology departments in medical facilities in each administrative region and village. Furthermore, as well as offering perinatal medical healthcare service, and performing deliveries and gynecological diagnosis, women with high risk pregnancies and births will be referred to CPOG from regional medical institutions.

Maternity Houses, the secondary healthcare facilities, forming the core of mother and child health care in the regions are either part of combined obstetrics and gynecological departments in regional hospitals or are independent Maternity Houses focusing on perinatal diagnosis and births. They also offer visiting perinatal diagnosis by mobile teams; this takes place once a month for every primary healthcare facility in a cover area of each Maternity House.

At the primary healthcare polyclinics and health posts, family doctors are responsible for registering pregnancies, carrying out low risk deliveries, examinations, perinatal diagnosis and vaccinations etc. for mothers and children.

However, current conditions are such that the different functions of each level of healthcare are no longer apparent due to obsolete facilities and equipment at many hospitals. Staff skills and facilities at primary healthcare hospitals are particularly poor; donor support is being actively pursued, but at the moment many are restricted to referring registration of pregnant women to high referral level hospitals despite that being one of their roles. Many pregnant women, even those at low risk, are forced to give birth at secondary healthcare facilities or higher.

(4) Coordination Between and Ranking of Target Hospital Health Sector

• National Development Plan

In 2003 Armenia's GNI per capita was USD 910, with a large group of people living below the poverty line on less than USD 1 per day. 34% of the population is living below the poverty line and 16% are living in extreme poverty. The Gini coefficient, which demonstrates income differentials, confirms that gaps in income distribution are extreme. To this backdrop, in 2003 the Armenian government formulated the Poverty Reduction Strategy Paper (PRSP) under the guiding hand of the World Bank and the IMF as part of

its National Development Plan.

The following healthcare sectors are being targeted by the PRSP: 1) strengthening PHC services and health programs with social significance (including HIV/AIDS and TB); 2) improving targeting; 3) reorganization of inefficient and inflated health care infrastructure; 4) improving “maternal and child health”; 5) improving access to essential drugs; 6) ensuring sustainable public financing at a level affordable for the economy; and 7) improving regulation and supervision of health system. The objective of this Project the “maternal and child healthcare” sector has been highlighted as an important sector in Armenia’s poverty reduction strategy.

Based on the above plan, in 2003, Ministry of Health of Armenia created the “National Health Policy for the Republic of Armenia 2004 - 2015” with goals to improve mother and child healthcare, PHC and healthcare finances.

Table 1 Health Development Objective Indicator of PRSP

	2001	2006	2009	2012	2015
Infant (0 - 1 year) mortality rate per 1,000 live births	15.4	14.4	13.0	11.5	10.0
Childhood (under 5) mortality rate per 1,000 live births	20.0	15.0	14.0	13.0	12.0
Maternal mortality rate per 100,000 live births	21.8	22.0	15.5	13.0	10.0
Public expenditure on health care, % of GDP	*11.8	1.9	2.1	2.3	2.5

Source: PRSP *2002

• Hospital Optimization Plan

In order to improve deteriorating healthcare services with a limited budget for healthcare, there has been a spate of closures of excess facilities and privatization of others under the Hospital Optimization Plan, which serves to reform the system of healthcare services—currently with significantly excessive supply—to better suit the size of the population. The number of hospital beds in 2003 was 48% less than that in 1987. The majority of the cuts have come through closure of small-scale regional hospitals and reducing beds in city hospitals; these do not yet go far enough to achieve the current goals of efficient distribution of the medical budget as there has been little change either to the vast numbers of healthcare workers or the number of urban medical facilities.

To this end, in the National Health Policy for the Republic of Armenia, the Ministry of Health has set as its mid-term objectives: 1) reduce the number of Yerevan hospitals and hospital beds by 30%; 2) complete the integration of the ambulatory-polyclinic system; 3) integrate about 80% of specialized services within the hospital system or privatize; 4)

provide the rural area with required specialists.

Chapter 2

Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

2-1-1 Goal and Objectives of the Project

The Armenian medical health sector offered a high quality medical health service during the time of the Soviet Union, however the collapse of the Soviet Union and subsequent worsened economic conditions and changes to the social system have caused a remarkable decline in quality. This decline in medical health services is reflected in the overall health of the general population, and in particular in the health of the weaker members of society – women and children. According to Ministry of Health statistics, the 2003 maternal mortality rate was 19.2 per 100,000 births while the infant mortality rate for 2003 was 12.0 per 1000 births – levels 2 ~ 4 times higher than the EU country average. The Armenian government has responded by drawing up a “National Health Policy for the Republic of Armenia 2004 - 2015” which sets out a number of reforms to the health system with the aim by 2015 of reducing maternal mortality and infant mortality rates to one third of their current levels.

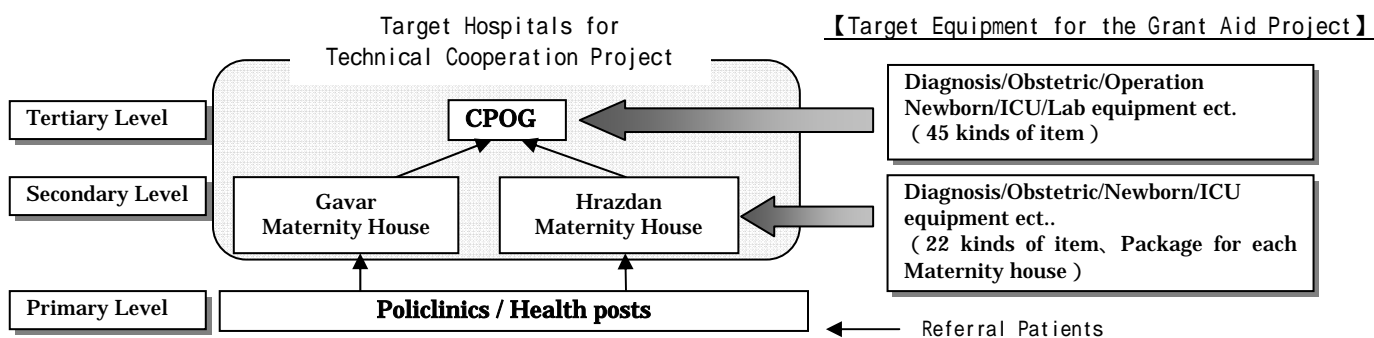
CPOG, the tertiary medical facility and Maternity Houses, secondary medical facility bear a large responsibility for mother and child healthcare services in Armenia. Much of the equipment at these facilities is obsolete and they are struggling to offer appropriate perinatal healthcare service. Furthermore, state financial difficulties make it extremely unlikely that this equipment can be replaced.

The Project aims, through the procurement of medical equipment of obstetric care to improve perinatal healthcare services at the target CPOG (tertiary healthcare facility) and Gavar and Hrazdan Maternity House (secondary healthcare facility).

2-1-2 Basic Concept of the Project

To achieve the above objectives, the Project has designated three target facilities that have also benefited from the activities of a preceding Technical Cooperation Project. The three facilities are CPOG in the capital city of Yerevan, Gavar Maternity House and Hrazdan Maternity House. Improvements to perinatal healthcare service at the target hospitals are anticipated through ties with this separately conducted Technical Cooperation Project to dispatch specialists to the facilities, alongside the procurement of equipment of obstetric care that is to take place in this Project. In the Project, 45 items of equipment (207

pieces) are to be procured for the diagnostic, obstetric, surgical, neonatal, ICU and laboratory departments of CPOG. Meanwhile, each Maternity House is set to receive 22 items of equipment (Gavar 34 pieces, Hrazdan 36 pieces) for their diagnostic, obstetric, neonatal and ICU departments.



2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

(1) Basic Design

The Project was requested to target Armenia's mother and child healthcare sector which has been singled out for attention by the Armenian state and more specifically with a view to improving perinatal healthcare services. Items of equipment for procurement for the target hospitals CPOG, Gavar Maternity House and Hrazdan Maternity House have been selected with due consideration to factors such as their beneficial effects, anticipated length of sustainable use, installation environment, and operations and maintenance skill. The basic policy has been to identify equipment and the its quantities needed by the target hospitals, focusing mainly on the replacement of existing old equipment, but also with consideration given to the activities of other donors and especially the potential synergetic effects of ties with the preceding planed Technical Cooperation Project in order to improve perinatal healthcare services and strengthening a referral system.

(2) Policy on the Choice of Equipment Specifications

Equipment designated for procurement in the Project will be appropriate to the skill level of healthcare staffs such as doctors, nurses and clinicians at the three target hospitals. Grade and quantity of equipment will be suitable in function and scope of medical

activities to enable the facilities to fulfill their role as tertiary and secondary healthcare facilities in Armenia's mother and child healthcare sector. Priority will be given to equipment that does not require frequent maintenance after installation or regular procurement of consumable.

(3) Policy on Operation and Maintenance

As the target hospitals operate on limited budget and attempts are made to reduce operating and maintenance costs, the Project will plan the procurement of equipment with particular attention paid to operating costs. Typical operating costs for equipment include the purchase of consumable, regular spot maintenance service and fuel/electricity expenses; however in this instance, the majority of selected equipment is very basic and will not incur significant costs for regular maintenance service, electricity or fuels. Furthermore, in cases where existing old equipment is to be replaced, operating costs will be reduced once the new equipment is in place. The main operating costs likely to arise from the new equipment are those consumable such as reagents, electrodes, printer paper, gel and light bulbs. Procurement care will be taken that stocks of reagents and consumable for all potential equipment may be maintained easily and inexpensively with all such items readily available either domestically or in neighboring countries. Only manufacturers of medical equipment with a guaranteed supply of expendables will be taken in consideration for procurement.

(4) Policy on Procurement Condition

1) Standard of the Medical Equipment

In Armenia, there is currently work underway to establish new standards for medical equipment. Since 1999, research has been ongoing into the use of a combination of ISO, EU and state GOST standards (harking back to former Soviet days), however clear legislation for the new set of standards has not yet been established. As with two past Japanese Grant Aid Projects on health sector, the Project will use as its guideline ISO, CE and JIS standards recognized in Japan and major industrial countries. Hence there are no foreseeable problems upon procurement.

2) Procurement from Third-party Countries

For equipment requiring a sustainable supply of reagents and consumable or maintenance services (mainly laboratory equipment), third party products that offer an

efficient network of local agents will be actively considered for the Project.

3) Inland Transportation

The basic transportation route of Japanese, European and US products is by sea container from point of dispatch to Poti port in neighboring Georgia from where goods will be transported overland through Georgia to Yerevan. Except for a very small stretch in Georgia close to the border, all roads on this route including those to CPOG in Yerevan and to the two Maternity Houses on the outskirts of Yerevan, are well maintained and bad traffic is unlikely to hinder access. There are no problems anticipated for the inland transportation of the equipment, and thus no special measures are deemed necessary.

(5) Policy for Operation and Maintenance Skills in the Target Hospitals

There are already many qualified doctors and medical staffs at the facilities with enough experience using the equipment planned for procurement, therefore no special measures are deemed necessary for practicing of the Soft Component for the Project. However, sufficient instruction in the operation of equipment and methods of maintenance will be given at the time of procurement.

(6) Policy for Consideration of the Environment

The Project will procure for refrigerators and freezers using CFC free gas as coolant. Besides this, there are no other items of equipment among those short-listed that are of particular environmental concern. Furthermore, sterilizers at all hospitals are to be replaced, thereby enhancing hospital infectious control policies.

(7) Policy on the Period of the Execution of the Project

The period of execution of the Project is fixed as one fiscal year. The target hospitals are the subject of the preceding Technical Cooperation Project through which specialists will be dispatched to the hospitals at the end of 2004. To produce synergetic effects through ties with this Technical Cooperation Project, procurement and its proper period will be carefully coordinated to ensure that all procurement, including from third-party countries, is carried out within the allotted timeframe.

2-2-2 Basic Plan (Equipment Plan)

(1) Total Concept of the Project Planning

Target hospitals of the Project are CPOG, Gavar Maternity House and Hrazdan Maternity House, all bases for activities under the preceding Technical Cooperation Project. In the Project, 45 items of equipment (207 pieces) are to be procured for the diagnostic, obstetric, surgical, neonatal, ICU and laboratory departments of CPOG. Meanwhile, each Maternity House is set to receive 22 items of equipment (Gavar 34 pieces, Hrazdan 36 pieces) for their diagnostic, obstetric, neonatal and ICU departments.

With respect to infrastructure conditions and electric power at each hospital, measurement of power capacity, voltage and frequency fluctuation confirmed that no barriers to operation of the equipment are likely. Nor are road conditions expected to cause difficulties, with easy access in all weathers. Yerevan's roads and trunk roads to the regions are all in good repair and the target hospitals are located either in central Yerevan or on the trunk road on the eastern side of town leading to Lake Sevan area.

(2) Equipment Plan

1) CPOG

[Equipment for Diagnosis]

• Ultrasound scanners

At CPOG, though the equipment is old, it has still been working at full capacity. In the year 2003, 5,088 examinations were performed, and 2,342 examinations so far in 2004 up until May. A forecast of 40 examinations per day has been made for procured items. This is essential equipment both for outpatient examinations and examination of seriously ill obstetric patients in the fourth floor obstetric department, thus two units are considered appropriate. One U.S. (colour Doppler) to facilitate examination of umbilical cord circulation, or unusual cardiac or placental circulation, and for examination of the infant brain. Convex, transvaginal, sector and linear probes are required for these examinations, and two of each will be procured. One microconvex probe for infant brain examinations will be procured for the obstetric department.

• Colposcope

Two colposcopes will be procured for replacement of the existing and defunct equipment. Taking into account maintenance costs, they should be the models connecting

with a normal 35 mm camera for recording method. Light sources with inexpensive halogen bulbs that are readily procurable will be selected.

• **Other Items**

For the centralization of use of equipment, three ECGs and two pulse oximeters will be procured in consideration for their frequency of use and effect. Considering the ECG will be used for mother and child diagnosis, the ECG should be general six-channel model.

Other old equipment to be replaced or supplemented includes such basic items as scales (height and weight), and sphygmomanometers. Five fetal dopplers are to be procured as they are to be included in the activities of the Technical Cooperation Project.

[Equipment for the Obstetric Unit]

There are two delivery suites, one on the third floor for infectious obstetric, and that on the fourth floor in the pathological obstetric ward. In these two wards, suction units, obstetrical beds, infant warmers, fetal monitors, and weight scales for newborns will be replaced as old existing equipment. As regards the obstetrical delivery beds, these are main related items for the activity of the Technical Cooperation Project, thus the electric working LDR (Labor Delivery Recovery) type beds are procured for.

[Laboratory Equipment]

At CPOG one biochemical analyzer is to be procured for routine tests, one coagulometer for blood tests for perinatal diagnosis with complication of pregnancy and one electrolyte analyzer for blood tests for perinatal diagnosis. For both biochemical and electrolyte analyzers, open type reagent is planned to the utmost for its regular supply. As well one refrigerator for drug (reagents etc.) storage will be procured.

[Equipment for the Operating Rooms]

At CPOG there are four obstetric operating rooms, used mainly for Caesarean sections. Three operating tables, two operation lamps, two patient monitors, three anesthetic units, three electrosurgical units, two instrument sets for obstetric surgery, four suction units, and four stretchers for these rooms, will be procured for replacing the older and troublesome equipment.

The principal operations carried out at this institution are Caesarean sections and other general gynecological operations. Standard hydraulic operation table which are not

necessary for regular maintenance will be procured. Meanwhile operation lamps are to be standard non-reflecting satellite type, and electro-surgical unit bi/mono polar type to enable incisions, arrest of bleeding, and coagulation will be procured. For anaesthetic units, since the existing piping of medical gases is unsatisfactory, built-in compressor model is required; vaporizer unit is planned halothane type commonly used in Armenia. Patient monitors will require the basic parameters of patient ECG, respiration, NIBP and SpO₂.

[Laparoscopy Sets]

The aim of procurement of laparoscope set is for laparoscopic surgery of endometriosis, myomas, extra-uterine pregnancies, adhesiolysis, ovarian cysts, and other types of benign tumor of gynaecological field. At present in the laparoscopy operation room there is an old laparoscopy set (combination of old components from various manufacturers) which will be replaced. Based on present operative activity, the component is planned as main unit (0 degree, 10mm laparoscope and hystero-resectoscope), light source, suction unit, endoscopic electro-surgical unit and electrodes, CO₂ gas insufflator, monitor, video apparatus, and general forceps.

[Equipment for Intensive Care Unit: ICU]

The target ICU is in the gynecology department at the fifth floor. Presently ICU is separated into two rooms, with three and six beds each. However, the rooms are small, and a total of six beds (two beds and three beds / room) would be more appropriate. Necessity for these six beds, existing old equipment will be replaced. The planned equipment consists of six ICU beds, six patient monitors, infusion pumps (syringe type) and one ventilator. The ICU does not have a nurse center, therefore it is not necessary to procure a central control monitor; independent bedside monitors only will be procured. The parameters of them are standard ones such as ECG, respiration, NIBP, and SpO₂.

[Equipment for Neonatal Intensive Care Unit: NICU]

The NICU, situated on the third and fourth floors of the gynecology department is a target for procurement. This plan calls for refurbishing old and out-dated equipment, particularly of incubators, infant warmers, weight scales, infusion pumps (syringe type), patient monitors, pulse oximeters, phototherapy units, percutaneous bilirubin meters, emergency care sets, among others.

There are two second-hand incubators procured by grant from other aid agency that

are still working in normal condition. Since the all open type infant warmers are not now functioning properly, five new warmers are to be replaced in the NICU. Also, in order to facilitate transport of newborn babies from the regional Maternity Houses, two transport infant incubators that can be fitted in ambulances are planned.

As to patient monitors, three bedside monitors will be procured. The parameter of them will be planned as following standard parameters: ECG, respiration, NIBP, SpO₂. Considering the frequency of use, one ventilator will be procured for serious case.

Since infusion pumps will be also used for neonates, and require sensitive control of infusion of drugs, syringe type pumps, which are calibrated for minute volumes and widely available will be procured. Generally, each patient in ICU and NICU will require several infusion pumps. Therefore, infusion pumps in ICU, NICU, and the operating rooms should be jointly managed, totally 22 pumps will be procured for the whole of CPOG.

[Centrally Controlled Items]

In order to set up a central sterilization system at CPOG, sterilizing room has been fully renovated. Considering the present sterilization activity such as items to be sterilized, volume and rotation system, two units of around 200 - 300 litre high-pressure steam sterilizers will be procured. For quick sterilization of laboratory equipment and small items, one hot air sterilizer will be procured for each floor.

One 30 kg capacity automatic washing machine will be procured for washing linens to replace the existing aging machine, and one ironer also will be replaced.

[Other Medical Items (Ward)]

For replacement of worn out equipment on the third and fourth floors of the gynecological wards, thirty two-crank beds, and thirty basic plastic bassinets will be procured.

2) Gavar Maternity House and Hrazdan Maternity House

[US Scanners]

At Gavar Hospital, the Project plans to procure one standard U.S. scanner (B/M mode) instead of the fixed term rental U.S. scanner in current use. Also, the Project calls for the replacement of the old US scanners at Hrazdan Hospital with the same. Regarding probes, convex probe and vaginal probe - generally used for gynecology and obstetrics diagnosis will be procured.

The Project will procure small mobile U.S. units (B/M mode) for diagnostic equipment of mobile teams. These portable units require only convex probe for the abdominal examinations of pregnant women.

[Outpatient Medical Examination Equipment]

One ECG and sphygmomanometers (two at Gavar and three at Hrazdan) are to be planned for replacement of old ones. A fetal doppler will be procured for mid-term perinatal examination and, and two gynecological examination chairs are also to be replaced at gynecological department.

[Operating Room Equipment]

One operating room in each hospital is target for replacing the existing old equipment. Each one of operating table, anaesthetic unit, pulse oximeter, instrument set for obstetric surgery will be procured. Although the pulse oximeters are newly procured equipment, they are much easier to operate than the general patient monitors for operating room, and easy to maintain, and relatively inexpensive, they have been included in this procurement.

[Delivery Equipment]

The delivery rooms in both Maternity Houses will be a main place for the Technical Cooperation Project activities. Two delivery rooms are to be targeted. Obstetric tables will be used by activities of the Technical Cooperation as with CPOG, two electric delivery tables (LDR type) are planned. The Project also plans to replace various old equipment such as patient monitor (obstetric use), infant warmer, and weight scale for newborns.

[Neonatal Intensive Care Unit: NICU]

Mainly old equipment is to be replaced, including two infant incubators, one patient monitor, six infusion pumps (syringe type), one phototherapy unit, and one transdermal bilirubin meter. The parameters of patient monitor are standard ones such as ECG, respiration, NIBP, and SpO₂.

[Intensive Care Unit (ICU)]

There is an ICU for gynecological patients, and one patient monitor is planned for this unit. Planed infusion pumps (syringe type) will be managed jointly with the NICU.

[Sterilizers]

One vertical steam sterilizer is planned for Gavar, and two for Hrazdan to replace old equipment. After consideration of restrictions imposed by the buildings' construction and the quantities of equipment for sterilization, 100 liter capacity units are planned.

2-2-3 Basic Design Drawing

Table 2 Plan for Equipment Allocation in CPOG

No.	Equipment	Procuring Qty.	Location of Installation	Installation Plan						Intended Use	Specification
				BF	1F	2F	3F	4F	5F		
1	U.S (Color Doppler) with Necessary Probes	2	Outpatient, Ob		1				1	To diagnose not only for prenatal process, abdominal organs, genital organs, but also various specific diagnosis in tertiary hospital such as circulatory disorder in umbilical cord, cardiovascular, placenta and cerebral diagnosis for infant	Scanning Methods:Electronic convex, Electronic linear, Electric Phased Array Sector. Beam former:Digital Monitor:15-inch color monitor or large size. Probes:Convex Probe, Sector Probe, Linear Probe, Trans-virginal, Micro-Convex Imaging Mode:B, M, D (PWD,CWD), Color D, Printer:Color, Probe selector:3 connectors or more
2	Fetal Doppler	5	Outpatient, Ob		1			2	2	To observe prenatal condition and to diagnosis for hypoxemia	Ultrasonic frequency:2.5 MHz FHR measurement range:50~200bpm or more wide range. Audible output:within 0.5 to 1.0 W, Ultrasonic output:Less than 10 mW/cm2. Power requirement:AC/DC(Rechargeable)
3	ECG	3	Outpatient, Ob		1		1	1		To observe cardiograph during irregular pulse and myocardial ischemia	Display waveform:12 lead ECG waveform simultaneously. Input impedance:10MΩor more. Number of channels:6 channels or more
4	Colposcope with Camera	2	Outpatient, Gy		1				1	To diagnose disorder of cervix uterus and erosion	Binocular and Balance Arm type. Eyepiece:More than 10X, Objective:f = 300mm, Camera:35mm, Light source:Halogen 150W or more, Filter:Green filter
5	Scales for Adult (Weight and Height)	3	Outpatient, Ob		2				1	To measure weight and height of Ob,Gy patients	Type:Manual/weight and height combined type or separate type. Weight capacity:Up to 150kg or more. Weight sensitivity:Less than 500g. Height measuring range:2,000mm or more wide range. Height minimum graduation:Less than 1mm
6	Sphygmomanometer with Infant and Adult Cuff	6	Outpatient, Ob, Gy		2	1	1	1	1	To measure blood pressure of patient s	Type:Mobile with Velcro cuff for infant and adult. Measurement range:0 to 300 mmHg or more wide range
7	Biochemical Analyzer	1	Lab			1				To be used for general biochemical tests of liver, kidney function, etc.	Through put:160 tests/hour or more. Measurement items:24 parameters or more. Wavelength:340 to 600nm or more wide range. Auto sampler:built-in
8	Coagulometer	1	Lab			1				To diagnose homeopathy complication of pregnant woman	Analysis parameters:PT, aPTT, TT, Fibrinogen and/or more parameters. Detector:2 or more. Incubation:37°C±0.5°C, Printer:Provided
9	Electrolytes Analyzer	1	Lab			1				To be used for the blood test of Na+, K+, Cl-ion, principally for the resuscitative examination	Measurement items:Na+, K+, Cl-. Sample type:Whole blood, serum, plasma, urine. Analysis time:Within 60 seconds. Printer:Built-in
10	Refrigerator for Drug Storage	1	Lab			1				To be used for cold storage of medicine (reagent, etc.)	Effective capacity:within 300 to 400L. Operating temperature:+2 ~ +14 or more wide range.
11	Refrigerator for Blood Storage	1	Gy						1	To be used for cold storage of blood for transfusion	Effective capacity:50 to 170L or more. Operating temperature:+4 ±1. Refrigerant:CFC-free
12	Plasma Freezer	1	Gy						1	To be used for cold storage of plasma	Effective capacity:140L or more. Operating temperature:-45 or -50. Refrigerant:CFC-free
13	Examination Lamp	5	Outpatient, Gy		3				2	Lamp for various diagnosis	Light source:Halogen bulb. Light intensity:Max. 30,000 lux or more. Stand:Provided
14	Operation Table	3	Ob, Gy				1	1	1	To be used for various Ob,Gy operations such as caesarian operation etc.	Operation:Manual hydraulic elevation by foot pedal. Size:1,930(L)x490(W)x770~1,000mm(H) or more wide range. Trendelenburg : -20°~ 15°or more. Back section:-15°~ 60°or more
15	OT Lamp	2	Ob				1	1		To be used for various Ob,Gy operations such as caesarian operation etc.	Light source:Main 5 pcs or more, Sub 3 pcs or more. Light intensity:Main Max. 110,000 lux or more, Sub Max. 80,000 lux or more. Focus control:Provided
16	Patient Monitor for OT	2	Ob				1	1		To monitor the condition of patient during surgical operations	Measured parameters:ECG, HR, Respiration, SpO2, Temperature, NIBP, Display:LCD (Color). ECG channels:3 or more. Respiration Measuring range:4 to 120 bpm or more wide range. SpO2 Measuring range:40 to 100% or more wide range. Temperature Measuring range:20 to 45°C or more wide range. NIBP Measurement range:25 to 260 mmHg or more wide range. Printer:Provided
17	Anesthetic Unit	3	Ob, Gy				1	1	1	To anesthetize patient during surgical operations	Flow meter unit:O2, N2O, AIR. Vaporizer:Halothane. Ventilator:Integrated electronically controlled. Electrically driven ventilator. Equipment should be built - in /or fixed on Anesthesia unit cart. Tidal volume:100 to 1,200 ml or more wide range
18	Electrosurgical Unit	3	Ob, Gy				1	1	1	To cut and coagulate with high frequency current electricity	Type:Monopolar & bipolar. Monopolar Cutting:Output 250W or more. Coagulation:Output 120W or more. Bipolar:Output 18W or more
19	Instrument Set for Obstetric Surgery	2	Ob				1	1		Instrument for obstetric surgery such as a caesarian operation etc.	Main Unit:stainless steel or equivalent. Operating knife, Scissors, Forceps, Needle, Sterilizable case, etc. 78 items
20	Laparoscope Set	1	Gy						1	To be used for laparoendoscopic surgery of Ob and Gy field	Laparoscope:10mm, 0°, Hystero-resectoscope:3mm, 12°, Insufflations Unit:High Flow CO2. Light source:Xenon. Electro-surgical unit:High frequency mono-polar and bi-polar. Suction unit:Suction/Irrigation. TV system: PAL, VIDEO:PAL, S-VHS. Monitor:Color, 20inch or 50cm or more. Main accessories:Trocar, retractor, Grasping forceps, Scissor, High frequency cord, probe, cannula, electrodes, cart
21-1	Suction Unit for OT	4	Ob, Gy				1	1	2	To suck blood, pus, washing liquid and other secretion liquid	Suction pressure range:-0.09Mpa to-0.1Mpa. Suction bottle:3,000ccx2 pcs., Pump:Rotary type or Piston type
21-2	Suction Unit (Low pressure type)	3	Ob				1	2		To suck blood, and other secretion liquid during delivery	Suction pressure range:0 to 200 mmHg or more wide range. Suction bottle size:within 1,000 to 3,000cc. Pump:Diaphragm type or Magnetic type
22	Stretcher	4	Ob, Gy			1	1	1	1	To transport patient inside hospital	Size:1,900mm(L)x550mm(W)x560mm to 845mm(H) or more range. Table height adjustment:Manual. Mattress:Plvoided, Caster:Plvoided

No.	Equipment	Procuring Qty.	Location of Installation	Installation Plan						Intended Use	Specification
				BF	1F	2F	3F	4F	5F		
23	Obstetrical Bed (LDR type)	4	Ob				2	2	To be practiced LDR bed-using delivery by Technical Cooperation Project	Size: 910mm(W)×2,000mm(L)×550 to 970mm(H) or more wide range, Back tilting angle:-5 to 60° or more wide range Bedside rail:Provided, Casters:Provided, Elevation mechanism:Electric	
24	Infant Warmer	9	Ob				4	5	To care for neonate	Temperature control:Manual Skin temp. control range:35 to 37 or more wide range, O2 cylinder/O2valve:Provided Suction device:Provided Alarms:Provided	
25	Fetal Monitor	2	Ob				1	1	To monitor the condition of fetus during delivery	FHR Measuring range:50 to 210bpm or more wide range FM Measurement:Automatic measurement by Doppler UC Input:Using external probe Printer:Built-in	
26	Electronic Weight Scales for the Newborn	6	Ob				3	3	To measure the weight of neonate	Weight capacity:0 to 12 or more wide range Display:Digital Weight sensitivity:Less than 5g	
27	Gynecological Examination Chair	4	Gy		2				To diagnose and treat gynecological patient	Operation:Manual hydraulic elevation by foot pedal Elevation range:650mm to 910mm or more wide range Back tilt angle:0 to 30°up or more	
28	ICU Bed	6	Gy						Bed for ICU patient	Size:850mm(W)×2,140mm(L)×500 to 720mm(H) or more wide range, Bed position:Trendelenburg, reverse trendelenburg, back rise and knee rise adjustment, Casters:Provided, Mattress:Provided, Crank:3cranks or more, Power:Electric	
29	Patient Monitor for ICU	6	Gy						To monitor the condition of ICU patient	Measured parameters:ECG, HR, Respiration, SpO2, Temperature, NIBP, Display:LCD (Color) ECG channels:3 or more, Respiration measuring range:4 to 120 bpm or more wide range SpO2 measuring range:40 to 100% or more wide range Temperature measuring range:20 to 45°C or more wide range NIBP measurement range:25 to 260 mmHg or more wide range Printer:Provided	
30	Infusion Pump (syringe type)	22	Ob, Gy				6	7	To control sensitive quantity of drug to patients	Flow rate range:0.1 to 199.9 ml/hr. or more wide range, Flow rate accuracy:within ± 2% with syringe involved Syringe:Usable 4 kinds syringe in 10, 20, 30, 40, 50 ml capacity, Alarms:Provided	
31	Ventilator	1	Gy						To be used for mechanical artificial breathing for ICU patients	Oxygen concentration:21 to 100% or more wide range Tidal volume:50 to 1,300 ml or more wide range PEEP:0 to 20 cmH2O or more range, Breathing frequency:8 to 40 times/min. or more range, Alarms:Airway pressure and apnea	
32	Infant Incubator	5	Ob				4	1	To care for low weight and immature neonate	Temperature control:Servo and manual Skin temp. control range:35 to 37.5 or more wide range, Air temp. range:25 to 37 or more wide range, Alarms:Provided	
33	Transport Infant Incubator	2	Ob				1	1	To transport seriously ill neonate	Temp. control range:30 to 37 or more wide range, Size:290(D) × 600(W)×240(H)mm to 440(D)×930(W)×360(H)mm Battery:12V, Alarms:Provided, Casters :Provided	
34	Patient Monitor for NICU	3	Ob				1	2	To monitor the condition of seriously ill neonate	Measured parameters:ECG, HR, Respiration, SpO2, Temperature, NIBP, Display:LCD (Color) ECG channels:3 or more, Respiration measuring range:4 to 120 bpm or more wide range SpO2 measuring range:40 to 100% or more wide range Temperature measuring range:20 to 45°C or more wide range NIBP measurement range:25 to 260 mmHg or more wide range Printer:Provided	
35	Pulse Oximeter	2	Ob				1	1	To be used for the percutaneous resuscital test	SpO2 measuring range:1 to 100% or more Pulse rate:30 to 254 bpm or more, Alarms:Provided	
36	Phototherapy Unit	2	Ob				1	1	To be used for treating for jaundice of neonate	Phototherapeutic lamps:20W × 5 pcs. or more Blue lamp, Timer:Provided Irradiation angle change:Adjustable	
37	Bilirubin Meter	2	Ob				1	1	To measure for bilirubin of neonate	Measuring range:0-20.0mg /dl or more wide range Measuring method:Non-Invasive Analyze Power requirement : Rechargeable Battery or 3AA Batteries	
38	Emergency Care Set for NICU	2	Ob				1	1	To be used for manual resuscitation to NICU patients	Type:For infant Contents:Silicone resuscitation bag with valve, mask, Airway, Case, total 8 items, Bag volume:250 to 500ml	
39	Infant Ventilator	1	Ob						To be used for mechanical artificial breathing for neonate	Oxygen concentration:21-100% or more wide range Breathing frequency:2 to 150bpm or more wide range Flow:3 to 30 L/min or more wide range, Alarm:Airway pressure and apnea Compressor:Equipment should be built – in /or fixed on ventilator main unit cart	
40	Steam Sterilizer	2	Sterilizer room	2					To be used for central sterilization for medical instrument in various kinds	Chamber capacity:220 to 300L, Control system:Full automatic with digital panel Sterilizing temperature:132 or more, Door operation:Automatic or manual Steam generator power:20kw to 40kw	
41	Hot Air Sterilizer	5	Outpatient, Gy, Ob		1	2	1	1	To be used for quick sterilization for small medical instrument	Effective capacity:within 90 to 120 L, Interior finish:Stainless steel, Temperature range:50°C to 250°C or more wide range, Heating system:Forced air or natural Temperature control system:Microcomputer	
42	Washing Machine	1	Washing room: Other building		1				To wash linen cloth	Function:Washing and Extracting Capacity:within 30kg to 35kg Drum Volume:within 300L to 370L, Heating System:Electrical	
43	Ironer	1	Ironing room: Other building		1				Ironer for linen cloth	Roller diameter:within 320 to 325mm Roller length:within 1,900 to 2,200mm, Ironing Speed:Adjustable 1.0m to 5.5m/min or more wide range, Heating system:Electricity	
44	Two Crank Bed	30	Ob				15	15	Bed for patient in ward	Size:950mm(W)×2,000mm(L)×750mm(H) or more Side-rail:Provided, Casters:Provided, Material: Steel base or epoxy resin powder, Mattress:Urethane, Crank:2cranks or more	
45	Bassinets	30	Ob				15	15	Bed for neonate in ward	Cot material:Clear plastic or acrylic resin Stand material: Steel made, Mattress:Provided, Casters:Provided, Size:430mm(W)×800mm(L)×850mm(H) or more	

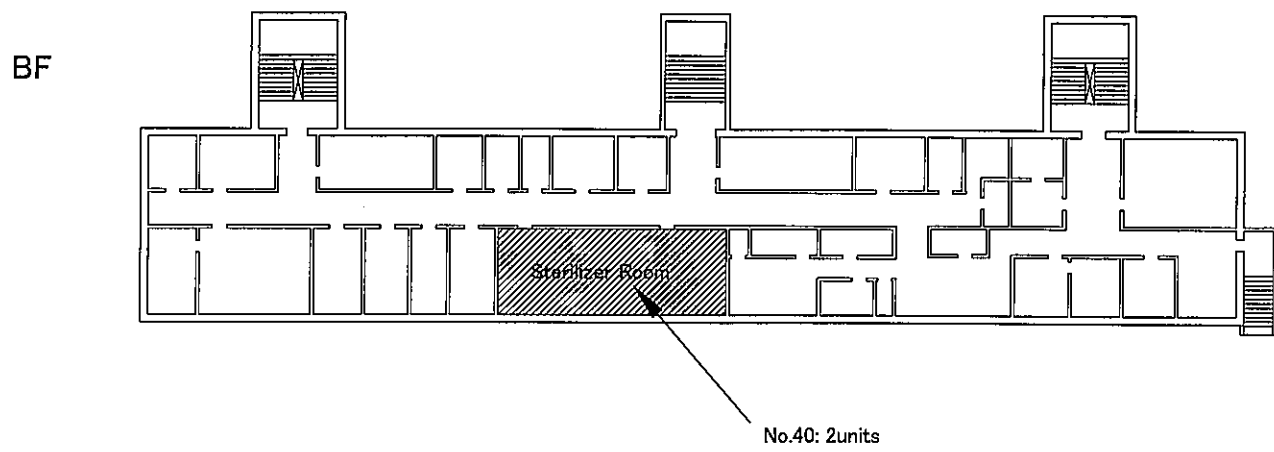
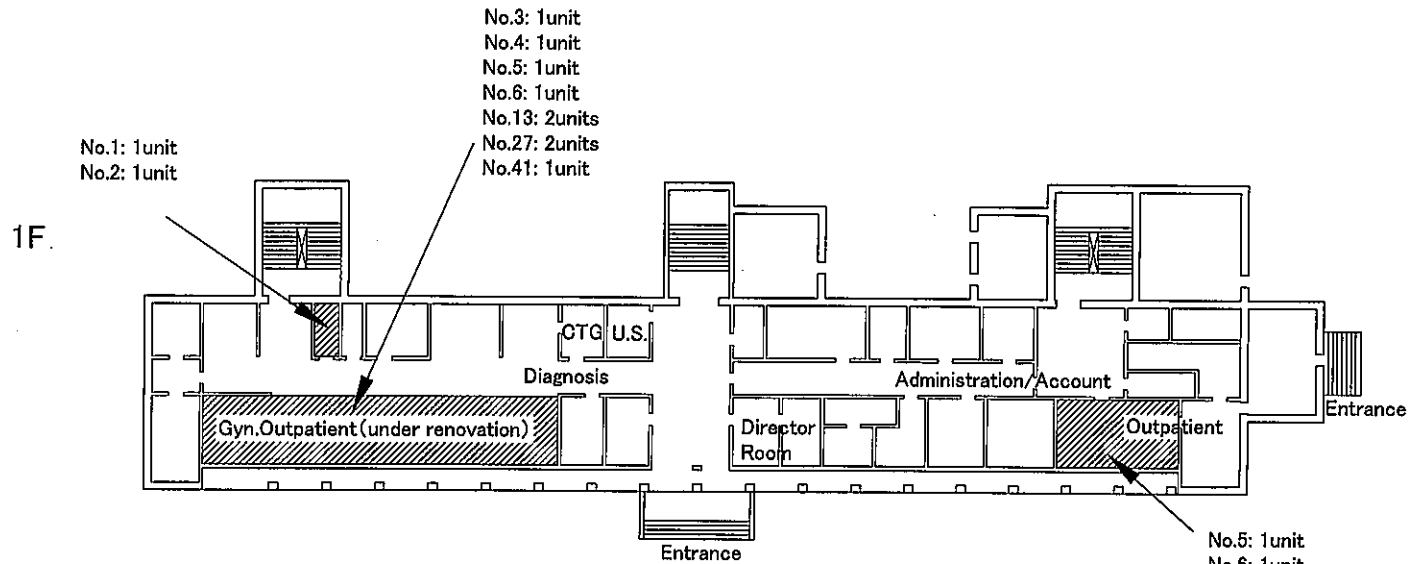
CPOG

BF: Storage/Sterilizer

1F: Outpatient/Administration/Account

Equipment Plan scale 1/500 drawing no. EC-BF-1F

2-13



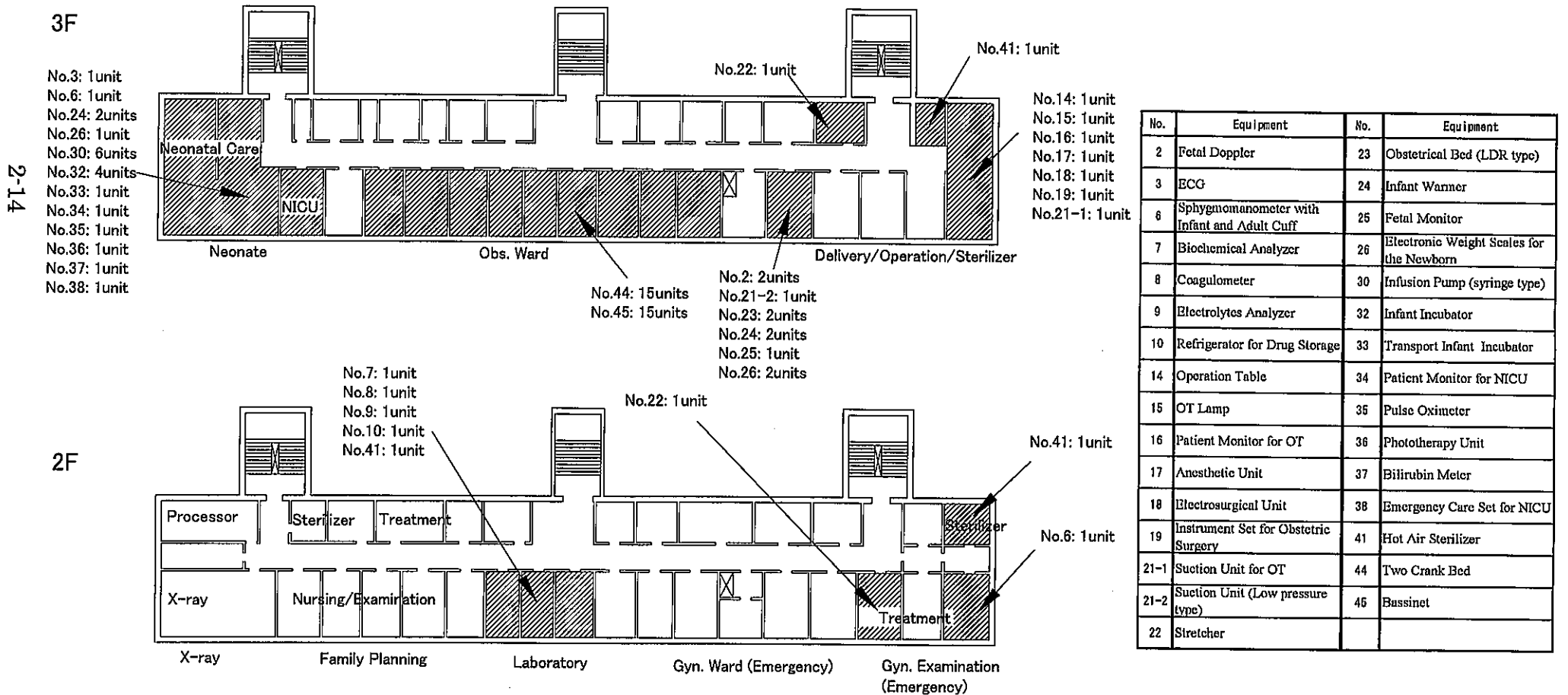
No.	Equipment
1	U.S (Color Doppler) with Necessary Probes
2	Fetal Doppler
3	ECG
4	Colposcope with Camera
5	Scales for Adult (Weight and Height)
6	Sphygmomanometer with Infant and Adult Cuff
13	Examination Lamp
27	Gynecological Examination Chair
40	Steam Sterilizer
41	Hot Air Sterilizer

CPOG

2F: Gynecology (Emergency)/Laboratory/Family Planning/X-ray

3F: Obstetrics (Infectious)

Equipment Plan scale 1/500 drawing no. EC-2F-3F



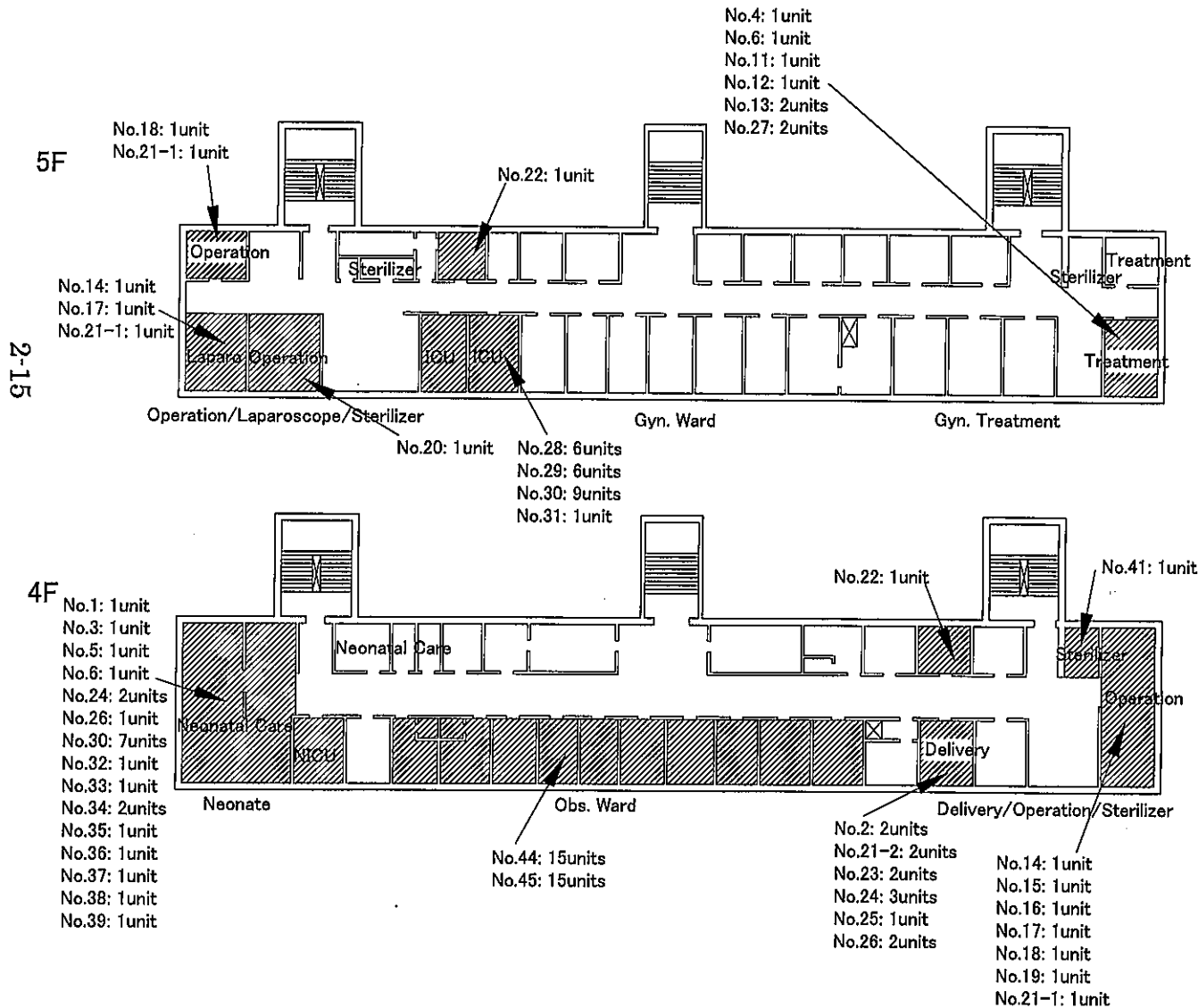
No.	Equipment	No.	Equipment
2	Fetal Doppler	23	Obstetrical Bed (LDR type)
3	ECG	24	Infant Wanner
6	Sphygmomanometer with Infant and Adult Cuff	25	Fetal Monitor
7	Biochemical Analyzer	26	Electronic Weight Scales for the Newborn
8	Coagulometer	30	Infusion Pump (syringe type)
9	Electrolytes Analyzer	32	Infant Incubator
10	Refrigerator for Drug Storage	33	Transport Infant Incubator
14	Operation Table	34	Patient Monitor for NICU
15	OT Lamp	35	Pulse Oximeter
16	Patient Monitor for OT	36	Phototherapy Unit
17	Anesthetic Unit	37	Bilirubin Meter
18	Electrosurgical Unit	38	Emergency Care Set for NICU
19	Instrument Set for Obstetric Surgery	41	Hot Air Sterilizer
21-1	Suction Unit for OT	44	Two Crank Bed
21-2	Suction Unit (Low pressure type)	45	Bussinet
22	Stretcher		

CPOG

4F: Obstetrics (Pathological)

5F: Gynecology

Equipment Plan scale 1/500 drawing no. EC-4F-5F



No.	Equipment	No.	Equipment
1	U.S (Color Doppler) with Necessary Probes	24	Infant Warmer
2	Fetal Doppler	25	Fetal Monitor
3	ECG	26	Electronic Weight Scales for the Newborn
4	Colposcope with Camera	27	Gynecological Examination Chair
5	Scales for Adult (Weight and Height)	28	ICU Bed
6	Sphygmomanometer with Infant and Adult Cuff	29	Patient Monitor for ICU
11	Refrigerator for Blood Storage	30	Infusion Pump (syringe type)
12	Plasma Freezer	31	Ventilator
13	Examination Lamp	32	Infant Incubator
14	Operation Table	33	Transport Infant Incubator
15	OT Lamp	34	Patient Monitor for NICU
16	Patient Monitor for OT	35	Pulse Oximeter
17	Anesthetic Unit	36	Phototherapy Unit
18	Electrosurgical Unit	37	Bilirubin Meter
19	Instrument Set for Obstetric Surgery	38	Emergency Care Set for NICU
20	Laparoscope Set	39	Infant Ventilator
21-1	Suction Unit for OT	41	Hot Air Sterilizer
21-2	Suction Unit (Low pressure type)	44	Two Crank Bed
22	Stretcher	45	Bassinet
23	Obstetrical Bed (LDR type)		

CPOG

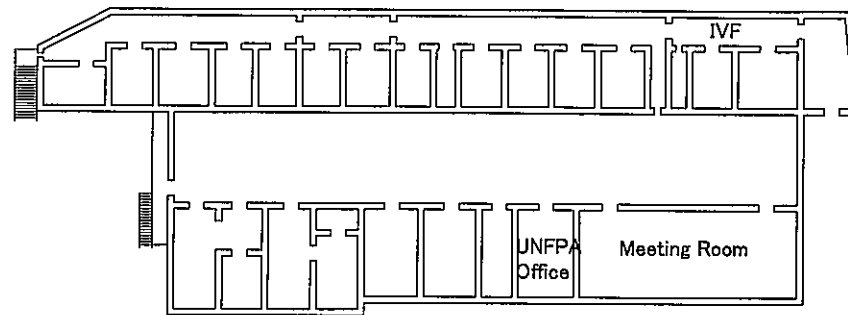
Annex 1F Washing Room/Storage

2F IVF/Donner Offices

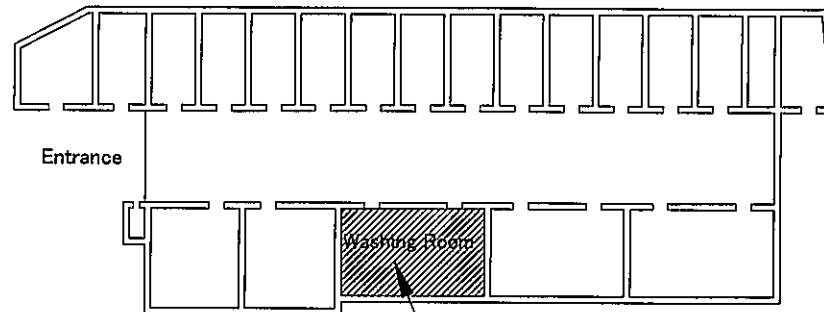
Equipment Plan scale 1/500 drawing no. EC-WR

2-16

2F



1F



No.42: 1unit
No.43: 1unit

No.	Equipment
42	Washing Machine
43	Ironer

Table 3 Plan for Equipment Allocation in Gavar Maternity House

No.	Equipment	Procuring Qty.	Location of Instaretion	Instaration Plan			Intended Use	Specification
				1F	2F	3F		
1	U.S (B/M Mode) with Necessary Probes	1	Outpatient • U.S room	1			To be used for ultrasound diagnosis for Ob,Gy examination of prenatal process, abdominal organs, genital organs	Scanning methods:Electronic convex, Electronic linear, Observation monitor:12 inch B/W monitor, Probes:Convex probe, Trans-vaginal probe, Image memory:32 frames or more, Display modes:B, B/B, M, B/M, Printer:B/W, Probe connector:2 connectors or more
2	Mobile U.S with Convex Probe	1	Examination (Ob)		1		To be used for Ob,Gy visiting examination by mobile team	Scanning methods:Electronic convex, Electronic linear, Observation monitor:7 or 9 inch B/W monitor, Probe:Convex probe, Display modes:B, B/B, M, B/M
3	Fetal Doppler	3	Outpatient • Delivery	1	2		To observe prenatal condition and to diagnosis for hypoxemia	Ultrasonic frequency:2.5 MHz FHR measurement range:50~200bpm or more wide range Audible output:within 0.5 to 1.0 W, Ultrasonic output:Less than 10 mW/cm2 Power requirement:AC/DC(Rechargeable)
4	ECG	1	Outpatient	1			To observe cardiograph during irregular pulse and myocardial ischemia	Display waveform:12 lead ECG waveform simultaneously Input impedance:10MΩor more, Number of channels:6 channels or more
5	Sphygmomanometer with Infant and Adult Cuff	2	Examination (Ob)		2		To measure blood pressure of patients	Type:Mobile with Velcro cuff for infant and adult Measurement range:0 to 300 mmHg or more wide range
6	Operation Table	1	Operation		1		To be used for various Ob,Gy operations such as caesarian operation etc.	Operation:Manual hydraulic elevation by foot pedal Size:1,930(L)x490(W)x770~1,000mm(H) or more wide range Trendelenburg : -20° ~ 15°or more, Back section:-15° ~ 60°or
7	Anesthetic Unit	1	Operation		1		To anesthetize patient during surgical operations	Flow meter unit:O2, N2O, AIR, Vaporizer:Halothane, Ventilator:Integrated electronically controlled, Electrically driven ventilator Equipment should be built – in /or fixed on Anesthesia unit cart, Tidal volume:100 to 1,200 ml or more wide range
8	Pulse Oximeter	1	Operation		1		To be used for the percutaneous resuscital test	SpO2 measuring range:1 to 100% or more, Pulse rate:30 to 254 bpm or more, Alarms:Provided
9	Instrument Set for Obstetric Surgery	1	Operation		1		Instrument for obstetric surgery such as a caesarian operation etc.	Main Unit:stainless steel or equivalent Operating knife, Scissors, Forceps, Needle, Sterilizable case, etc. 78 items
10	Obstetrical Bed (LDR type)	2	Delivery		2		To be practiced LDR bed-using delivery by Technical Cooperation Project	Size: 910mm(W)×2,000mm(L)×550 to 970mm(H) or more wide range, Back tilting angle:-5 to 60°or more wide range Bedside rail:Provided, Casters:Provided, Elevation mechanism:Electric
11	Fetal Monitor	1	Delivery		1		To monitor the condition of fetus during delivery	FHR Measuring range:50 to 210bpm or more wide range FM Measurement:Automatic measurement by Doppler UC Input:Using external probe, Printer:Built-in
12	Infant Warmer	2	Delivery		2		To care for neonate	Temperature control:Manual Skin temp. control range:35 to 37 or more wide range, O2 cylinder/O2valve:Provided Suction device:Provided, Alarms:Provided
13	Infant Incubator	2	NICU		2		To care for low weight and immature neonete	Temperature control:Servo and manual Skin temp. control range:35 to 37.5 or more wide range, Air temp. range:25 to 37 or more wide range, Alarms:Provided
14	Patient Monitor for NICU	1	NICU		1		To monitor the condition of ICU patient	Measured parameters:ECG, HR, Respiration, SpO2, Temperature, NIBP, Display:LCD (Color) ECG channels:3 or more, Respiration measuring range:4 to 120 bpm or more wide range SpO2 measuring range:40 to 100% or more wide range Temperature measuring range:20 to 45°C or more wide range NIBP measurement range:25 to 260 mmHg or more wide range
15	Infusion Pump (syringe type)	6	NICU• ICU		4	2	To control sensitive quantity of drug to patients	Flow rate range:0.1 to 199.9 ml/hr. or more wide range, Flow rate accuracy:within ± 2% with syringe involved Syringe:Usable 4 kinds syringe in 10, 20, 30, 40, 50 ml capacity, Alarms:Provided
16	Phototherapy Unit	1	NICU		1		To be used for treating for jaundice of neonate	Phototherapeutic lamps:20W×5 pcs. or more Blue lamp, Timer:Provided, Irradiation angle change:Adjustable
17	Bilirubin Meter	1	NICU		1		To measure for bilirubin of neonate	Measuring range:0-20.0mg /dl or more wide range Measuring method:Non-Invasive Analyze Power requirement : Rechargeable Battery or 3AA Batteries
18	Electronic Weight Scales for the Newborn	1	Delivery		1		To measure the weight of neonate	Weight capacity:0 to 12 or more wide range Display:Digital Weight sensitivity:Less than 5g
19	Emergency Care Set for NICU	1	NICU		1		To be used for manual resuscitation to NICU patients	Type:For infant Contents:Silicone resuscitation bag with valve, mask, Airway, Case, total 8 items, Bag volume:250 to 500ml
20	Gynecological Examination Chair	2	Examination (Ob,Gy)		1	1	To diagnose and treat gynecological patient	Operation:Manual hydraulic elevation by foot pedal Elevation range:650mm to 910mm or more wide range Back tilt angle:0 to 30°up or more
21	Patient Monitor for ICU	1	ICU		1		To monitor the condition of patient during surgical operations	Measured parameters:ECG, HR, Respiration, SpO2, Temperature, NIBP, Display:LCD (Color) ECG channels:3 or more, Respiration measuring range:4 to 120 bpm or more wide range SpO2 measuring range:40 to 100% or more wide range Temperature measuring range:20 to 45°C or more wide range NIBP measurement range:25 to 260 mmHg or more wide range
22	Steam Sterilizer (Vertical)	1	Sterilizer room	1			To be used for central sterilization for medical instrument	Chamber capacity:within 100 to 130 L, Chamber material:Stainless steel, Sterilizing temperature:110 to 127 or more wide range, Timer:1 to 60min. or more

Gaver Maternity House

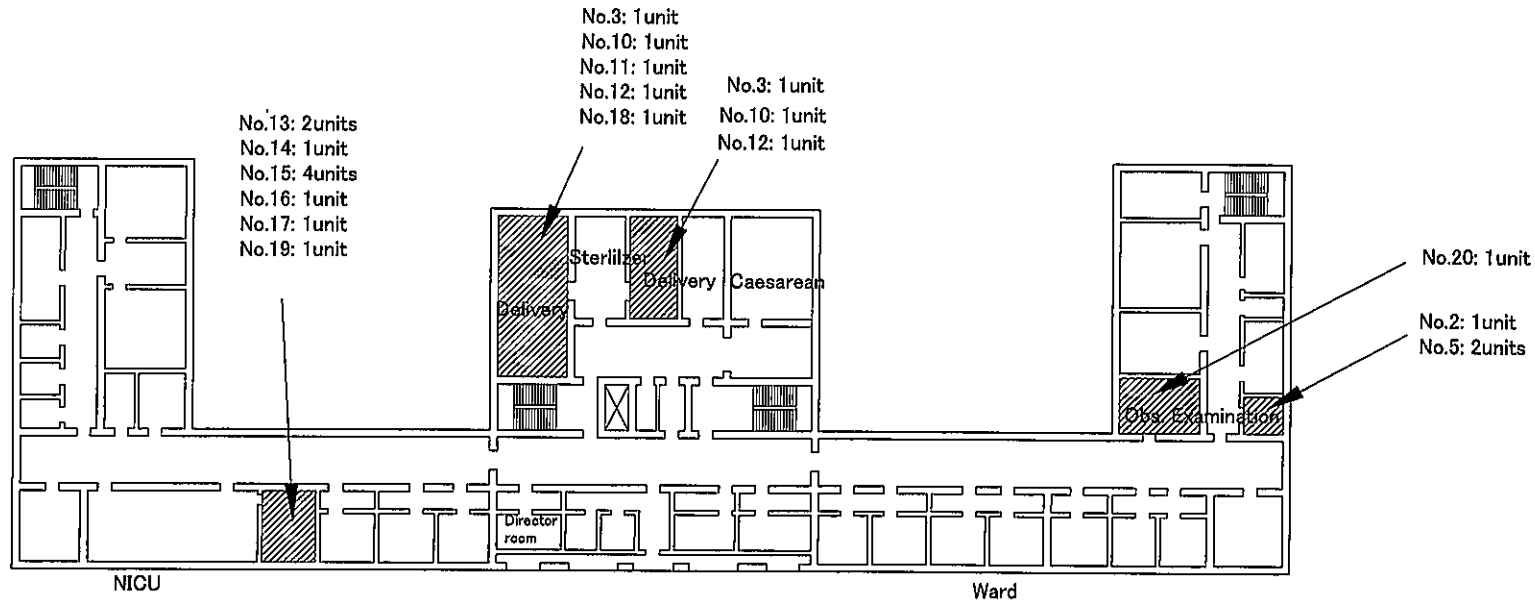
1F Administration/Outpatient/U.S diagnosis

2F Obstetrics/NICU

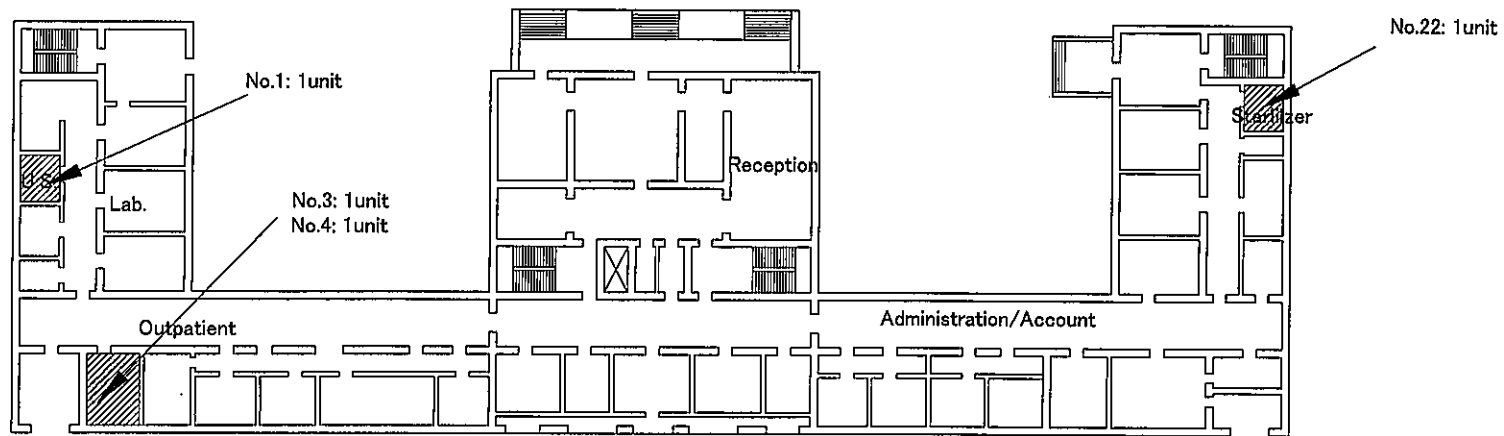
Equipment Plan scale 1/500 drawing no. EG-1F-2F

2F

2-18



1F

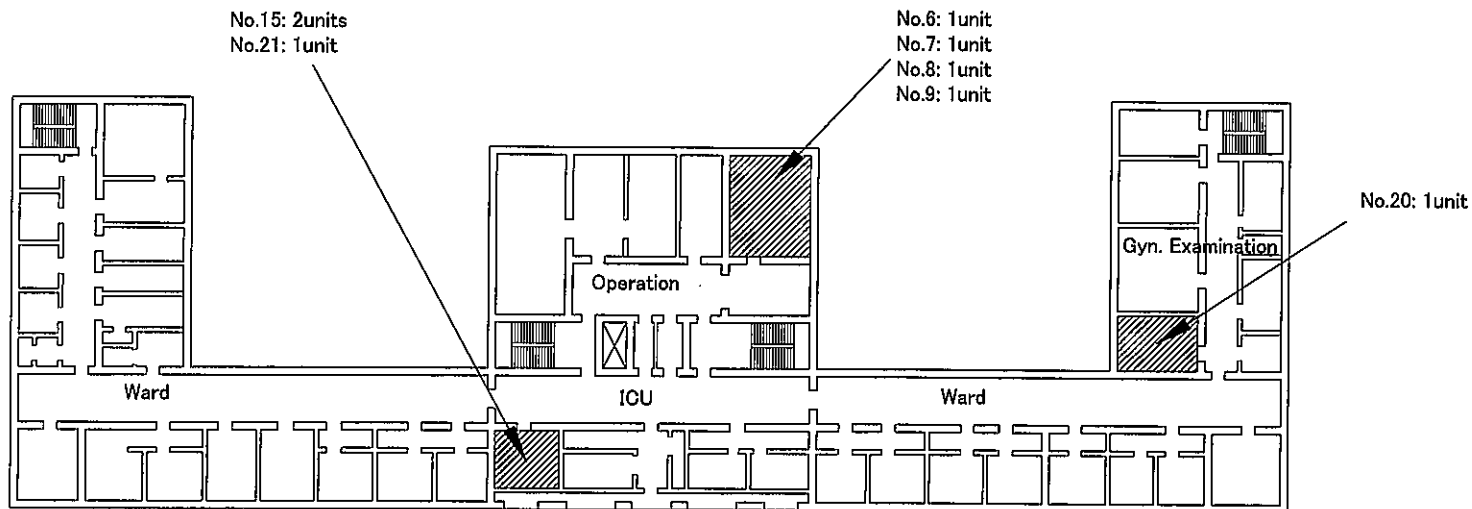


No.	Equipment
1	U.S (B/M Mode) with Necessary Probes
2	Mobile U.S with Convex Probe
3	Fetal Doppler
4	ECG
5	Sphygmomanometer with Infant and Adult Cuff
10	Obstetrical Bed (LDR type)
11	Fetal Monitor
12	Infant Warmer
13	Infant Incubator
14	Patient Monitor for NICU
15	Infusion Pump (syringe type)
16	Phototherapy Unit
17	Bilirubin Meter
18	Electronic Weight Scales for the Newborn
19	Emergency Care Set for NICU
20	Gynecological Examination Chair
22	Steam Sterilizer (Vertical)

Gaver Maternity House
 3F Gynecology/ICU
 Equipment Plan scale 1/500 drawing no. EG-3F

3F

2-19



No.	Equipment
6	Operation Table
7	Anesthetic Unit
8	Pulse Oximeter
9	Instrument Set for Obstetric Surgery
15	Infusion Pump (syringe type)
20	Gynecological Examination Chair
21	Patient Monitor for ICU

Table 4 Plan for Equipment Allocation in Hrazdan Maternity House

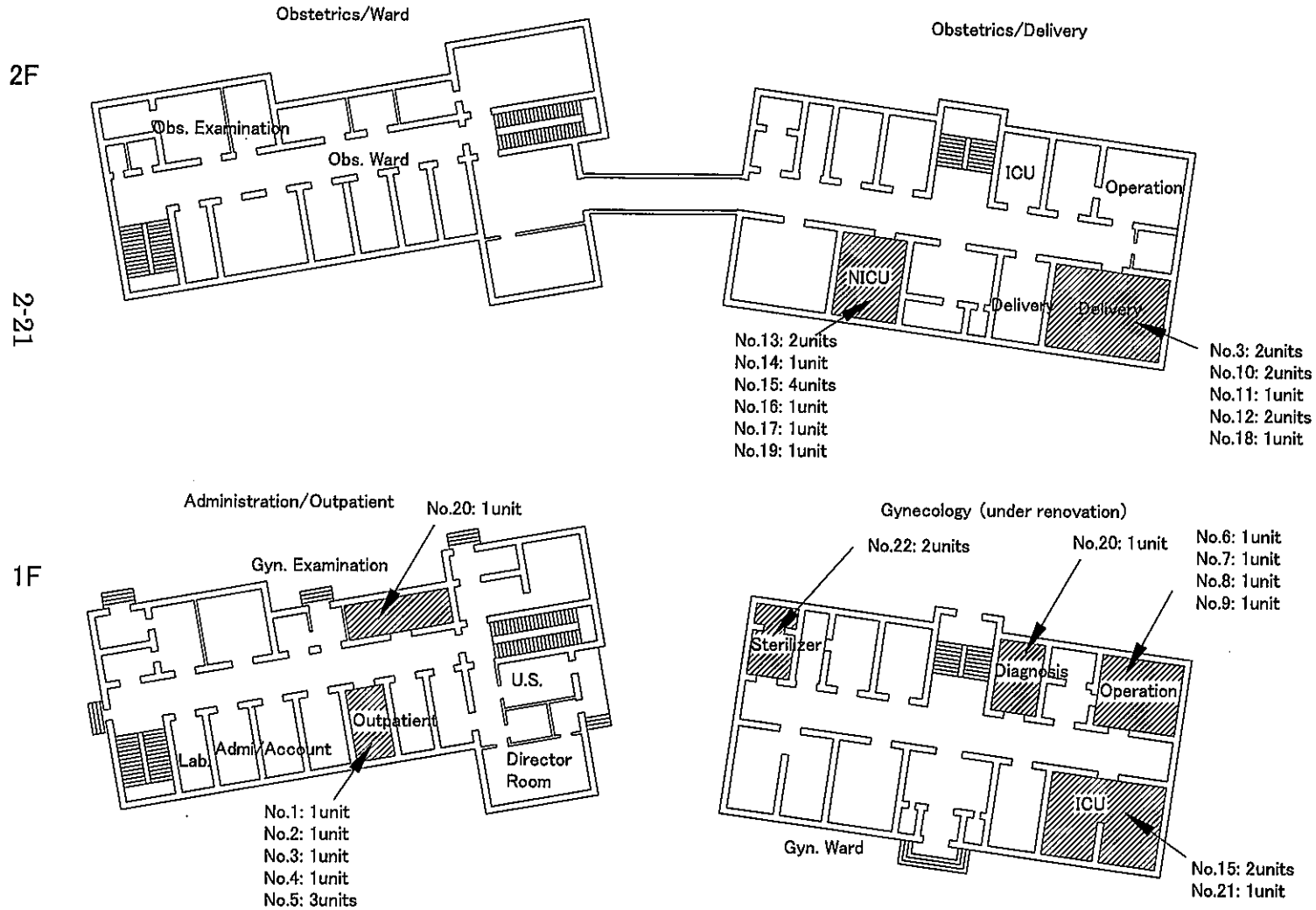
No.	Equipment	Procuring Qty.	Location of Instauration	Instauration Plan				Intended Use	Specification
				1F		2F			
				Out	Gy	Ob	NICU		
1	U.S (B/M Mode) with Necessary Probes	1	Outpatient • U.S room	1				To be used for ultrasound diagnosis for Ob,Gy examination of prenatal process, abdominal organs, genital organs	Scanning methods:Electronic convex, Electronic linear , Observation monitor:12 inch B/W monitor, Probes:Convex probe, Trans-vaginal probe, Image memory:32 frames or more, Display modes:B, B/B, M, B/M, Printer:B/W, Probe connector:2 connectors or more
2	Mobile U.S with Convex Probe	1	Outpatient • U.S room	1				To be used for Ob,Gy visiting examination by mobile team	Scanning methods:Electronic convex, Electronic linear , Observation monitor:7 or 9 inch B/W monitor, Probe:Convex probe, Display modes:B, B/B, M, B/M
3	Fetal Doppler	3	Outpatient • Delivery	1		2		To observe prenatal condition and to diagnosis for hypoxemia	Ultrasonic frequency:2.5 MHz, FHR measurement range:50~200bpm or more wide range Audible output:within 0.5 to 1.0 W, Ultrasonic output:Less than 10 mW/cm2 Power requirement:AC/DC(Rechargeable)
4	ECG	1	Outpatient	1				To observe cardiograph during irregular pulse and myocardial ischemia	Display waveform:12 lead ECG waveform simultaneously Input impedance:10MΩor more Number of channels:6 channels or more
5	Sphygmomanometer with Infant and Adult Cuff	3	Outpatient	3				To measure blood pressure of patients	Type:Mobile with Velcro cuff for infant and adult Measurement range:0 to 300 mmHg or more wide range
6	Operation Table	1	Operation		1			To be used for various Ob,Gy operations such as caesarian operation etc.	Operation:Manual hydraulic elevation by foot pedal Size:1,930(L)x490(W)x770~1,000mm(H) or more wide range Trendelenburg : -20°~ 15°or more, Back section:-15°~ 60°or more
7	Anesthetic Unit	1	Operation		1			To anesthetize patient during surgical operations	Flow meter unit:O2, N2O, AIR, Vaporizer:Halothane, Ventilator:Integrated electronically controlled, Electrically driven ventilator Equipment should be built – in /or fixed on Anesthesia unit cart, Tidal volume:100 to 1,200 ml or more
8	Pulse Oximeter	1	Operation		1			To be used for the percutaneous resuscital test	SpO2 measuring range:1 to 100% or more, Pulse rate:30 to 254 bpm or more, Alarms:Provided
9	Instrument Set for Obstetric Surgery	1	Operation		1			Instrument for obstetric surgery such as a caesarian operation etc.	Main Unit:stainless steel or equivalent Operating knife, Scissors, Forceps, Needle, Sterilizable case, etc. 78 items
10	Obstetrical Bed (LDR type)	2	Delivery			2		To be practiced LDR bed-using delivery by Technical Cooperation Project	Size: 910mm(W)×2,000mm(L)×550 to 970mm(H) or more wide range, Back tilting angle: -5 to 60°or more wide range Bedside rail:Provided Casters:Provided, Elevation mechanism:Electric
11	Fetal Monitor	1	Delivery			1		To monitor the condition of fetus during delivery	FHR Measuring range:50 to 210bpm or more wide range FM Measurement:Automatic measurement by Doppler UC Input:Using external probe, Printer:Built-in
12	Infant Warmer	2	Delivery			2		To care for neonate	Temperature control:Manual Skin temp. control range:35 to 37 or more wide range, O2 cylinder/O2valve:Provided Suction device:Provided Alarms:Provided
13	Infant Incubator	2	NICU				2	To care for low weight and immature neonete	Temperature control:Servo and manual Skin temp. control range:35 to 37.5 or more wide range, Air temp. range:25 to 37 or more wide range, Alarms:Provided
14	Patient Monitor for NICU	1	NICU				1	To monitor the condition of ICU patient	Measured parameters:ECG, HR, Respiration, SpO2, Temperature, NIBP, Display:LCD (Color) ECG channels:3 or more, Respiration measuring range:4 to 120 bpm or more wide range, SpO2 measuring range:40 to 100% or more wide range Temperature measuring range:20 to 45°C or more wide range NIBP measurement range:25 to 260 mmHg or more wide range Printer:Provided
15	Infusion Pump (syringe type)	6	NICU• ICU		2		4	To control sensitive quantity of drug to patients	Flow rate range:0.1 to 199.9 ml/hr. or more wide range, Flow rate accuracy:within ± 2% with syringe involved Syringe:Usable 4 kinds syringe in 10, 20, 30, 40, 50 ml capacity, Alarms:Provided
16	Phototherapy Unit	1	NICU				1	To be used for treating for jaundice of neonate	Phototherapeutic lamps:20W× 5 pcs. or more Blue lamp, Timer:Provided, Irradiation angle change:Adjustable
17	Bilirubin Meter	1	NICU				1	To measure for bilirubin of neonate	Measuring range:0-20.0mg /dl or more wide range Measuring method:Non-Invasive Analyze Power requirement : Rechargeable Battery or 3AA Batteries
18	Electronic Weight Scales for the Newborn	1	Delivery				1	To measure the weight of neonate	Weight capacity:0 to 12 or more wide range Display:Digital Weight sensitivity:Less than 5g
19	Emergency Care Set for NICU	1	NICU				1	To be used for manual resuscitation to NICU patients	Type:For infant Contents:Silicone resuscitation bag with valve, mask, Airway, Case, total 8 items, Bag volume:250 to 500ml
20	Gynecological Examination Chair	2	Examination (Gy)	1	1			To diagnose and treat gynecological patient	Operation:Manual hydraulic elevation by foot pedal Elevation range:650mm to 910mm or more wide range Back tilt angle:0 to 30°up or more
21	Patient Monitor for ICU	1	ICU				1	To monitor the condition of patient during surgical operations	Measured parameters:ECG, HR, Respiration, SpO2, Temperature, NIBP, Display:LCD (Color) ECG channels:3 or more, Respiration measuring range:4 to 120 bpm or more wide range, SpO2 measuring range:40 to 100% or more wide range Temperature measuring range:20 to 45°C or more wide range NIBP measurement range:25 to 260 mmHg or more wide range Printer:Provided
22	Steam Sterilizer (Vertical)	2	Sterilizer room				2	To be used for central sterilization for medica instrument	Chamber capacity:within 100 to 130 L, Chamber material:Stainless steel, Sterilizing temperature:110 to 127 or more wide range, Timer:1 to 60min. or more

Hrazdan Maternity House

1F: Administration/Outpatient/Laboratory/U.S diagnosis/Gynecology

2F: Obstetrics/Ward/Delivery

Equipment Plan scale 1/500 drawing no. EH-1F-2F



No.	Equipment
1	U.S (B/M Mode) with Necessary Probes
2	Mobile U.S with Convex Probe
3	Fetal Doppler
4	ECG
5	Sphygmomanometer with Infant and Adult Cuff
6	Operation Table
7	Anesthetic Unit
8	Pulse Oximeter
9	Instrument Set for Obstetric Surgery
10	Obstetrical Bed (LDR type)
11	Fetal Monitor
12	Infant Warmer
13	Infant Incubator
14	Patient Monitor for NICU
15	Infusion Pump (syringe type)
16	Phototherapy Unit
17	Bilirubin Meter
18	Electronic Weight Scales for the Newborn
19	Emergency Care Set for NICU
20	Gynecological Examination Chair
21	Patient Monitor for ICU
22	Steam Sterilizer (Vertical)

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

The Project will be carried out after the signing of the Exchange of Notes (E/N) by the two governments concerned in accordance with Japan's Grant Aid Scheme.

1. After the Notes are exchanged, the entire scope of the Project, from design, installation, and inspection to procurement, should be completed smoothly and promptly. Therefore, plans involving work and personnel should be formulated so that each stage of the Project can be executed efficiently and effectively.
2. To ensure smooth execution of the Project, a time and location should be arranged for representatives from the relevant organizations of the government of Armenia such as the Ministry of Foreign Affairs, Ministry of Health and from the target hospitals to meet with staff from a Japanese consulting firm and supplier of the equipment, so as to discuss plans and other details.

After the Project is approved by the governments of both countries involved and the Exchange of Notes (E/N) is concluded, a Japanese consulting firm that is currently under contract with the Armenian Government will oversee the plan's execution as well as actual procurement of the equipment. Also, a supplier of the equipment will be determined on the basis of open tender as specified in the official notes, and this supplier will be responsible for procurement and installation of the equipment.

(1) Party Responsible for the Implementation of the Project

The responsible party in the Recipient Country is the Ministry of Health. The Ministry of Health will act as the contracting party of the Recipient Country, and shall be responsible for implementing the Project. The Ministry of Health is required to cooperate in regard to the appointment of the responsible persons concerned for the facility and work necessary for unpacking, delivery, and assembly / trial run of the equipment.

The Ministry of Health and the Ministry of Finance and Economy shall be responsible for customs clearance, internal transportation, and so forth.

(2) Consultant

Following the signing of the Exchange of Notes (E/N) between two governments concerned, the Ministry of Health shall sign a consultation agreement with a Japanese national consulting firm for the detailed design of the equipment to be procured. The work

will also be associated with tendering and supervision of the Project implementation. The agreement will be verified subject to approval by the Japanese Government. The consultant shall be responsible for implementation of the following work under the agreement.

1) Detailed Design Phase

The final confirmation of the Project, reviewing the equipment specifications, preparation of tender documents, supervision of tender procedure, and evaluation of the contents of the tender.

2) Implementation Phase

Supervision of Project implementation including control of the work schedule, inspections of equipment, supervision of transportation, supervision of installation work, and issuance of certificates.

(3) Suppliers of the Equipment

Based on the Exchange of Notes (E/N) and in accordance with the “Guidelines for Procurement” under Japan’s Grant Aid Scheme, the Ministry of Health shall sign a procurement agreement with Japanese national suppliers that shall be determined on the basis of open tenders on the equipment to be procured. The agreement shall be verified subject to the approval of the Japanese Government. The suppliers shall implement the following tasks under the agreement:

- Procurement, transport, and delivery of the equipment
- Installation of the equipment, and technical guidance concerning operation, maintenance, and repair

2-2-4-2 Implementation Conditions

To enable all aspects of the Project to be accomplished from procurement of goods to shipment, importation up until arrival at its destination efficiently and in the shortest possible time, maintaining close communication with the equipment suppliers is tantamount in order to ensure reliable progression of the work. In the target hospitals particularly, extra effort must be made to ensure that the separate Technical Cooperation Project proceeds according to plan. It is vital therefore that the Project is tightly executed. As to the planned procurement of refrigerators and freezers for CPOG, CFC (chlorofluorocarbon) free gas will be used.

2-2-4-3 Scope of Works

The work procured for the Project by the Recipient Country and covered by Japan's Grant Aid is described below.

1) Work to be carried out by Armenia

- Processing the procured equipment through customs in an appropriate and timely manner, and for the necessary expenses involved
- Preparation of storage area for the equipment to be procured until the time of installation
- Removal of existing equipment (Operation lamp, Steam sterilizer, Washing machine etc) obstacle to installation among the procured equipment
- Preparation of the route for carrying the equipment to the room

2) Work to be covered by Japan's Grant Aid

- Procurement of the new medical equipment
- Transport of the procured equipment (Ocean freight and inland transportation) to three target hospitals, installation, and trial run of the procured equipment
- Technical transfer on operation and maintenance of the procured equipment

2-2-4-4 Consultant Supervision

A Japanese national consulting firm shall procure fair guidance, advice, and coordination throughout the detailed design phase and implementation phase of the Project. Furthermore, this consulting firm shall do whatever is necessary in order to ensure the smooth implementation of the Project in accordance with the Japan's Grant Aid Scheme and the Basic Design Study Report. The consultant will be deemed to have completed its work when the equipment is completely installed, it is confirmed that all conditions of the contract have been met, the official delivery of the equipment is witnessed, and the approval of the Recipient Country is obtained.

(1) Policy of Implementation Supervision

- Management of the completion dates for installation, maintaining close contact among all parties concerned
- Supervision of installation work
- Suggestions for maintenance after the official delivery of equipment

(2) Personnel Plan

1) Detailed Design Phase

The consultants required for the supervision of detailed design shall be as follows:

• **Project Manager: One (1)**

Comprehensive supervision and direction of the consulting work.

• **Equipment Planner 1/ Implementation Supervision: One (1)**

Re-examination of the Project, confirmation of the equipment specification, preparation of tender documents and evaluation of the contents of the tender.

• **Equipment Planner 2/Cost Planner: One (1)**

Confirmation of the equipment specification, estimation of Project costs, preparation of tender documents and evaluation of the contents of the tender.

2) Implementation Phase

The consultants required for the supervision of implementation shall be as follows:

• **Stationed Implementation Supervision: One (1)**

Supervision of implementation at the Project site.

• **Implementation Supervision: One (1)**

Arrangement pre-confirmation with Armenian side, supervision of installation work, and issuance of certificates.

• **Inspection Engineer (drawing confirmation): One (1)**

Confirmation and verification of the drawing.

• **Inspection Engineer (per-shipment inspection): One (1)**

Arrangement and contact for pre-shipment inspection.

2-2-4-5 Procurement Plan

(1) Important Factors in the Procurement of Equipment

The Project has focused on procuring basic equipment which does not need frequent maintenance, a high level of technical skill to maintain, or agent measure for breakdowns. However, it is important that lab equipment requiring a sustained supply of reagents and other equipment needing repair services, consumable or spare parts (such as ME related equipment, laparoscopy sets, incubators, anaesthetic units, ventilators etc.) should be procured from companies with local agents within Armenia and neighboring countries.

(2) Procurement from Third-party Countries

When procuring equipment that requires servicing or a stable supply of spare parts or consumable, it is essential that there are local agents of manufacturer either in Armenia or in neighboring countries.

Third-party manufacturers (principally of European and US) with local agents in Armenia and neighboring Georgia who can serve sustainable supplies of reagents and delivery of consumable for procuring equipment must be taken also for a fair tender process.

Meanwhile, Armenia has a good relationship with Russia, market distribution channels are stable and the majorities of European and US medical equipment manufacturers, as well as many Japanese ones, have legal incorporation in Moscow or representative offices or agents based there. Moscow is well set up to service Armenia and other CIS countries. Therefore, for maintenance of general equipment that does not require regular service, manufacturers with agents in Moscow, as well as those with agents in Armenia and its neighboring countries will be better to consider.

(3) Inland Transport

Considering facilities in the port of Poti in Georgia, and road conditions, safety and reliable delivery dates, unloading equipment at the port of Poti in Georgia and the overland transportation route via Georgia to Yerevan in Armenia is the most suitable. As in the past, Japanese Medical Grant Aid has twice used this supply route.

(4) Plan of the Dispatching Engineers

A technician will be dispatched from either Japan or the country of origin in order to install the equipment. Other necessary staff for the installation will generally be sourced from local. In order to ensure sufficient transfer of skill to the doctors and other responsible persons at the facilities, an operation and daily maintenance training process will be created for a suitable period of time.

Table 5 Engineer Dispatch Plan

Engineer	Number	Days	Period (M/M)
Field Manager	1	22 (*4 travel days)	0.73
Laboratory Related Equipment	1	4 (*2 travel days)	0.13
Centrally Controlled Items	1	4 (*2 travel days)	0.13

*Field Manager will be dispatched from Japan.

Engineer of Lab equipment and centrally controlled item will be dispatched from Moscow, because many manufacturers have local agencies in Moscow.

2-2-4-6 Implementation Schedule

When the time arrives for the Project to be carried out, the consulting firm will investigate the specifications of the equipment. Then, the supplier of the equipment, who will be decided through open tender, will procure the equipment.

The Project implementation schedule is given in **Table 6**.

Table 6 Project Implementation Schedule

Accumulate month	1	2	3	4	5	6	7	8	9	10	11	12		
Detailed Design	▨	(Consultation Agreement & Final Project Confirmation)												
		□	(Preparation of Tender Document)											
		▨	(Approved by the Recipient Country)											
			□	(Preparation for Tendering)										
			▨	(Tendering & Evaluation)										
	(Total 3.5 months)													
Procurement	□					(Procurement)			▨	(Transportation)				
	▨					(Installation)			(Total 6.5 months)					
	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> Works in Japan Works in Recipient Country </div> </div>													

2-3 Obligations of the Recipient Country

The Recipient Country shall perform the following for the smooth implementation of the Project.

- To remove the existing equipment in CPOG (see **Table 11** Contents of Expense Borne by Armenian Side)
- To exempt customs duties, internal taxes, and other fiscal levies that may be imposed in the Recipient Country with respect to the supply of the equipment and the provision of services under the verified contracts
- To ensure both prompt customs clearance in the Recipient Country and a procedure for internal transportation therein of the medical equipment brought from Japan and third-party countries
- To provide Japanese nationals and third-party country engineers working on the Project with every convenience to facilitate their entry into the Recipient Country and their stay therein

- To ensure that the equipment procured under the Grant Aid Scheme should be maintained and used properly and effectively for the Project
- To confirm that the Recipient Country bears all expenses except for those agreed to be covered by the Japanese government

2-4 Project Operation Plan

2-4-1 Operation and Maintenance Plan

As regards the level of technical skills of the medical staff at CPOG, since Soviet times the hospital was both a center for mother and child healthcare provision and a teaching hospital. Since achieving independence, many doctors have gained valuable work experience in modern medical facilities in Moscow, Europe and the US; hence they possess a high degree of technical skill. Similarly for Gavar and Hrazdan Maternity Houses, the focus is on the replacement of obsolescent equipment and mainly of basic equipment. There are many doctors with work experience in European, US and Russian hospitals and so it is believed that there will be no barriers to the use and management of this new equipment.

Each target hospital will generally have autonomy to manage its own operations. Income streams will be derived from the medical treatment of gynecology and obstetric diagnosis, pediatrics, chronic illness, venereal disease, emergency medical care and PHC all of which are covered by the BBP program. Consultation and treatment fees covered by the BBP program will be reimbursed from the state budget, whilst fees for consultations and treatment that lie beyond the scope of the BBP program are to be paid by the patients.

As can be seen from **Table 7**, payments to target hospitals from the state BBP program since 2002 amounted to nearly 100% of the totals invoiced, thereby ensuring that the financial position of each target hospital is almost balanced. Delays in paying staff wages due to budget pressure have been rectified since 2002, and recent management of the target hospitals is much healthier.

Where equipment requires frequent maintenance services or sustainable supply of consumable or spare parts, and for laboratory equipment requiring a constant supply of reagents, the Project aims to ensure speedy and cost effective supply of services by considering only those manufacturers supported by efficient agencies in Armenia or neighboring countries.

Details of the operation and maintenance costs for each new item of equipment and

those costs as a proportion of total hospital income can be seen in **2-4-2 (Operation and Maintenance Costs)**.

Table 7 Payments to Target Hospitals from the State BBP program

	2001	2002	2003
CPOG	88.5%	*104.0%	100%
Gavar Maternity House	46.0%	*144.0%	100%
Hrazdan Maternity House	52.8%	83.6%	100%

*Compensation for unpaid fee of previous year

2-4-2 Operation and Maintenance Cost

The operation and maintenance budget incurred by the Project will be met by hospital budgets from their main income sources: payment of diagnosis fees from the BBP program indemnified by state budget for perinatal diagnosis, deliveries etc. as well as from the participation paid by patients for healthcare service falling outside of the BBP program.

(1) Operation and Maintenance Costs for Procurement of Equipment

Table 8 gives estimates of operation and maintenance expenses for the planned equipment and expenses for each target hospital.

Table 8 Estimates of Operation and Maintenance Expenses for the Planned Equipment and Expenses for Each Target Hospital.

Unit: AMD1, 000

Equipment	Unit Cost/Year	Remarks and Estimate Base	Cost of Each Hospital		
			CPOG	Gavar	Hrazdan
Ultrasound scanner	200	10 patients/day, consumable : gel, printer paper	400	200	200
Mobile U.S scanner	100	5 patients/day, consumable : gel, printer paper	-	100	100
Laparoscope	125	5 patients/day, consumable : bulb	125	-	-
Colposcope	125	5 patients/day, consumable : bulb	125	-	-
Fetal Monitor	15	5 patients/day, consumable : gel, printer paper	30	15	15
Infant Incubator	70	consumable : access port cover, air filter (replace every 3 months)	350	140	140
Patient Monitor	250	consumable : electrode (7 elements type)	2,000	250	250
Patient Monitor for NICU	250	consumable : electrode	750	250	250
Phototherapy Unit	20	1 patients/day, consumable : lamp (replace every 3,000h)	40	20	20
ECG	150	5 patients/day, consumable : printer paper, electrode	450	150	150
Coagulometer	300	30 tests/day, consumable : printer paper, electrode, reagent	300	-	-
Electrolytes Analyzer	375	30 tests/day, consumable : printer paper, electrode, reagent	375	-	-
Biochemical Analyzer	1,000	50 - 100 tests/day, consumable : printer paper, reagent, lamp/fuse, cell	1,000	-	-
Total			5,945	1,125	1,125

Estimate Condition : 250 Annual working days

(Excluding maintenance cost and Procuring consumable from internal market)

(2) Operation and Maintenance Costs as a Proportion of Target Hospital

Expenditure

In the preceding **Table 8**, the figures shown are the expenses to be financed by each hospital for the operation and maintenance of new equipment. This total as a proportion of average annual expenditure for the years 2000 ~ 2003, gives the modestly higher figures of CPOG (2.2%), Gavar Maternity House (3.6%), and Hrazdan Maternity House (2.6%), as can be seen in **Table 9**. Given the current improved state of hospital finances and financing through the state budget of the BBP Program (with its focus on the maternal and child healthcare sector), the budgetary allowance for running costs brought about by the Project is without any problem. Because the procurement of equipment will augment the quality of medical service and efficiency in the hospitals, it can be expected that numbers of patients will rise. Along with the higher numbers of examinations and treatments, we will see an increase to hospital revenues paid both from the state budget and by patients.

Furthermore, the curbing of both maintenance costs and power consumption will be expected thanks to the upgrade of equipment.

Table 9 Expenses to be Financed by each Hospital for the Operation and Maintenance Cost

	Unit: AMD1, 000		
	CPOG	Gavar	Hrazdan
Annual Operation and Maintenance Cost for Procured Equipment	5,945	1,125	1,125
Annual Expenditure (Average:2000 – 2003)	267,398	31,004	43,971
Ratio (/ ×100)	2.2%	3.6%	2.6%

2-5 Estimated Cost of the Project

(1) Expense Borne by Japanese Side

Total cost of Japanese side is estimated at approximately JPY 209.10 million. The total cost of the plan is composed of procurement cost of equipment, as well as equipment transportation to target hospitals, delivery and installation / trial run of the equipment, guidance for operation / maintenance.

Still, this cost estimate is provisional and would be further examined by the Government of Japan for the approval of the Grant Aid.

Table 10 Project Cost Estimation

Total Estimation Cost JPY 209.10 million

Contents			Estimation Cost (million JPY)	
Equipment	CPOG	Ob and Gy Departments	98.93	131.55
		Laboratory	4.73	
		ICU	27.89	
	Gavar Maternity House	Ob and Gy Departments	25.77	25.77
	Hrazdan Maternity House	Ob and Gy Departments	26.38	26.38
	Dispatch of Manager, Supervisor and Engineer			25.40

(2) Expense Borne by Armenian Side

Removal of the existing Operation lamp, Steam Sterilizer, Washing machine, Ironer in CPOG shall be borne by the Armenian side.

The necessary cost can be estimated as follow.

Table 11 Contents of Expense Borne by Armenian Side

Target Hospital	Removal Items	Expenses
CPOG	Operation lamp	AMD 24,000
	Steam sterilizer	AMD 50,000
	Washing machine	AMD 50,000
	Ironer	AMD 50,000
	Total	AMD 174,000

(3) Condition of Cost Estimation

Estimated as of : November 2004

Exchange rate : 1 US \$ = 110.08 YEN

1EURO=135.99 YEN

Implementation Schedule : Refer to **Table 6**

Others : The Project shall be implemented in accordance with Japan's Grant Aid Scheme

Chapter 3

Project Evaluation and Recommendations

Chapter 3 Project Evaluation and Recommendations

3-1 Project Effect

As the target hospitals include CPOG, the tertiary medical facility of the mother and child healthcare sector, which accepts all pregnant women across Armenia, the target beneficiaries of the Project will be the 933,000 women of child-bearing age nationwide (15 ~ 49 years) and the approximately 42,000 newborns (2003 statistics), hence the resultant benefits felt will be far-reaching. Meanwhile, secondary medical facilities, Gavar and Hrazdan Maternity Houses are core hospitals offering perinatal medical services to pregnant women, receiving patients from primary health care facilities and carrying out regional diagnosis and therefore the populations in the regions stand to benefit directly.

Furthermore, the promotion of Evidence-Based Medicine (hereafter: EBM) at each target hospital is planned through a Technical Cooperation Project, involving specialists to be dispatched in order to improve the safety and quality of pregnancy and births. Through cooperation with The Project, synergistic effects are to be expected in improved perinatal healthcare service and the organization of a referral system between target hospitals.

1) Direct Effects

- Providing a high quality perinatal diagnostic system at each target hospital.
- Increasing numbers of obstetric and gynecology patients and registered pregnancies through an improved perinatal healthcare service at each target hospital.
- Early diagnosis and treatment of abnormality during the perinatal period through improved perinatal diagnostic function at each target hospital and function of CPOG, as the top referral hospital in mother and child health sector.
- Reduction of neonatal mortality rates through promoting safe births and increasing lifesaving rates of neonates at each target hospital.

2) Indirect Effects

- Expected reduction of maternal, neonatal, and perinatal mortality rates at national level.
- Benefit to domestic and foreign medical students due to CPOG's improved function as a medical educational institution.

The following recommendations are proposed too ensure the smooth realization of this Project, the smooth application of the newly procured equipment by the target facilities and the achievement of initial object:

3-2 Recommendations

The high implementing capability of the Ministry of Health for this Project can be expected, therefore, the following measures are proposed to ensure the quick realization of this Project, the smooth application of the newly supplied equipment by the target facilities and the achievement of initial objectives:

(1) Stability of healthcare finance

The free health program in the mother and child healthcare sector – including the target sector of this Project – is financed by the BBP budget of the Ministry of Health. At present, the Ministry of Health is trying to stabilize the BBP program and there is a possibility that future BBP program costs from the state budget will rise. In the long term, however, under the constraints of a weak economy and a fragile state budget, ensuring a separate revenue stream via the introduction of a public health insurance system will be vital. It is important not just to increase annual medical revenues, but also to create a system whereby limited finances are utilized in the most efficient way, with a higher portion of the public health budget being allotted to the crucial PHC level. Stabilization of the BBP Program and the introduction of a future public health insurance system will allow many women and children greater access to treatment. Moreover, free operations in neonatal medical service and for congenital disorders, both incurring high costs, may contribute to a reduction in the infant mortality rate.

(2) Cooperation with PHC projects funded by other donors

As the field of mother and child healthcare is prioritized in the national health policy, The Project – with its target of secondary and tertiary hospitals – has a complementary relationship with ongoing aid projects from the World Bank and UN institutions, which focus mainly on PHC level medical institutions. On account of enabling the effect of this Project more effectible and sustainable, Cooperation with projects undertaken by the above donors such as 1) equipment procurement and facility renovation, 2) provision of a public

health information system including the creation of an information network across each medical facility, and improvement in reliability of medical statistics, and 3) assistance of fostering and retraining medical staff, will be vital. However, donor coordination is not enough to be effective at present. Exchange of ideas and information regarding cooperation between donors, leading by Department of International Relations of Ministry of Health – has function of donor coordination, will not only render the Project more effective, but will bring further improvements to the quality of Armenia’s mother and child healthcare service.

Appendices

Appendix-1 Member List of the Study Team

(1) Field Survey

1.Mr. Masaya FUJIMOTO	Leader	Team Director, Health Team Project Management Group Grant Aid Management Dept. JICA
2.Dr. Makiko NOGUCHI	Technical Advisor	Visiting Research Worker, Dept. of Health Policy and Planning School of International Health Faculty of Medicine The University of Tokyo
3.Mr. Kenta SASAKI	Project Coordinator	Reproductive Health Team Group IV (Health II) Human Development Dept. JICA
4.Mr. Yoshiharu HIGUCHI	Chief Consultant / Equipment Planner 1	ICONS International Cooperation Inc.
5.Mr. Tamotsu NOZAKI	Procurement and Cost Planner/Equipment Planner 2	ICONS International Cooperation Inc.
6.Mr. Haruo ITO	Facility Planner	ICONS International Cooperation Inc.

(2) Explanation of Draft Report

1.Mr. Toshiyuki IWAMA	Leader	Deputy Resident Representative, JICA, U.K. Office
2.Dr. Makiko NOGUCHI	Technical Advisor	Visiting Research Worker, Dept. of Health Policy and Planning School of International Health Faculty of Medicine The University of Tokyo
3.Mr. Yoshiharu HIGUCHI	Chief Consultant / Equipment Planner 1	ICONS International Cooperation Inc.

Appendix-2 Study Schedule

(1) Field Survey

No.	Date	Movement	Activities	Accommodation
1	June.22(Tue)	Narita Vienna ^(A,B,C,D)		Flight ^(A,B,C,D)
2	June.23(Wed)	Yerevan ^(A,B,C,D)	Visit MoFA and MoH, Explanation of Inception Report ^(A,B,C,D)	Yerevan ^(A,B,C,D)
3	June.24(Thu)	Narita Vienna ^(E,F)	Explanation of Inception Report CPOG, Hrazdan Maternal Hospital ^(A,B,C,D)	Yerevan ^(A,B,C,D) Flight ^(E,F)
4	June.25(Fri)	Yerevan ^(E,F)	CPOG ^(A,B,C,D,E,F)	Yerevan ^(A,B,C,D,E,F)
5	June.26(Sat)		Discussion of Minutes of Discussion Site survey of former project ^(A,B,C,D,E,F)	Yerevan ^(A,B,C,D,E,F)
6	June.27(Sun)		Meeting ^(A,B,C,D,E,F)	Yerevan ^(A,B,C,D,E,F)
7	June.28(Mon)	Yerevan London ^(C)	Discussion and signing of Minutes of Discussion ^(A,B,D,E,F)	Yerevan ^(A,B,D,E,F) Flight ^(C)
8	June.29(Tue)	Narita ^(C) Yerevan London ^(A)	Gavar Maternal Hospital ^(B,D,E,F)	Yerevan ^(B,D,E,F) Flight ^(A)
9	June.30(Wed)	Narita ^(A)	Gavar Maternal Hospital ^(B,D,E,F)	Yerevan ^(B,D,E,F)
10	Jely.1(Thu)		Hrazdan Maternal Hospital ^(B,D,E,F)	Yerevan ^(B,D,E,F)
11	Jely.2(Fri)		CPOG ^(B,D,E) Survey for procurement ^(F)	Yerevan ^(B,D,E,F)
12	Jely.3(Sat)		CPOG ^(B,D,E) Survey for procurement ^(F)	Yerevan ^(B,D,E,F)
13	Jely.4(Sun)		Meeting ^(B,D,E,F)	Yerevan ^(B,D,E,F)
14	Jely.5(Mon)		CPOG ^(B,D,E) MoH ^(F)	Yerevan ^(B,D,E,F)
15	Jely.6(Tue)		CPOG ^(B,D,E,F)	Yerevan ^(B,D,E,F)
16	Jely.7(Wed)	Yerevan Vienna ^(F)	CPOG ^(B,D,E)	Yerevan ^(B,D,E) Flight ^(F)
17	Jely.8(Thu)	Narita ^(F)	Survey for other donors ^(B,D,E)	Yerevan ^(B,D,E)
18	Jely.9(Fri)		Survey for other donors ^(B,D,E)	Yerevan ^(B,D,E)
19	Jely.10(Sat)	Yerevan London ^(B)	Survey for procurement ^(D,E)	Yerevan ^(D,E) Flight ^(B)
20	Jely.11(Sun)	Narita ^(B)	Meeting ^(D,E)	Yerevan ^(D,E)
21	Jely.12(Mon)		Gavar Maternal Hospital ^(E) Survey for other donors ^(D)	Yerevan ^(D,E)
22	Jely.13(Tue)		Hrazdan Maternal Hospital ^(E) Survey for other donors ^(D)	Yerevan ^(D,E)
23	Jely.14(Wed)		CPOG ^(D,E)	Yerevan ^(D,E)
24	Jely.15(Thu)		CPOG, Survey for other donors ^(D,E)	Yerevan ^(D,E)
25	Jely.16(Fri)		CPOG ^(D,E)	Yerevan ^(D,E)
26	Jely.17(Sat)		Survey for procurement ^(D,E)	Yerevan ^(D,E)
27	Jely.18(Sun)		Survey for procurement ^(D,E)	Yerevan ^(D,E)
28	Jely.19(Mon)	Yerevan Moscow ^(D) Yerevan Vienna ^(E)	Visit MoH ^(D)	Moscow ^(D) Flight ^(E)
29	Jely.20(Tue)	Narita ^(E)	Survey for procurement in Moscow Visit Embassy of Japan in Moscow ^(D)	Moscow ^(D)
30	Jely.21(Wed)	Moscow ^(D)	Survey for procurement in Moscow ^(D)	Flight ^(D)
31	Jely.22(Thu)	Narita ^(D)		

(A) Team Leader, (B) Technical Advisor, (C) Project Coordinator, (D) Chief Consultant / Equipment Planner 1, (E) Procurement and Cost Planner/Equipment Planner 2, (F) Facility Planner

(2) Explanation of Draft Report

No.	Date	Movement	Activities	Accommodation
1	Sep.20(Mon)	Narita Vienna ^(C)		Flight ^(C)
2	Sep.21(Tue)	Yerevan ^(C)	Visit MoH, Explanation of Draft Report ^(C)	Yerevan ^(C)
3	Sep.22(Wed)		Visit CPOG, Explanation of Draft Report ^(C)	Yerevan ^(C)
4	Sep.23(Thu)		Visit Gavar Maternal Hospital, Explanation of Draft Report ^(C)	Yerevan ^(C)
5	Sep.24(Fri)		Visit Hrazdan Maternal Hospital, Explanation of Draft Report ^(C)	Yerevan ^(C)
6	Sep.25(Sat)		Survey for procurement ^(C)	Yerevan ^(C)
7	Sep.26(Sun)	Narita Vienna ^(B)	Data arrangement	Yerevan ^(C) Flight ^(B)
8	Sep.27(Mon)	Yerevan ^(B)	Visit CPOG, Explanation of contents of equipment ^(B,C)	Yerevan ^(B,C)
9	Sep.28(Tue)	London Vienna ^(A)	Visit CPOG, Explanation of contents of equipment ^(B,C)	Yerevan ^(B,C) Flight ^(A)
10	Sep.29(Wed)	Yerevan ^(A)	Visit Hrazdan Maternal Hospital, Explanation of contents of equipment ^(A,B,C)	Yerevan ^(A,B,C)
11	Sep.30(Thu)		Visit MoFA, Explanation of Draft Report ^(A,B,C)	Yerevan ^(A,B,C)
12	Oct.1(Fri)		Discussion of Minutes of Discussion ^(A,B,C)	Yerevan ^(A,B,C)
13	Oct.2(Sat)		Discussion and signing of Minutes of Discussion ^(A,B,C)	Yerevan ^(A,B,C)
14	Oct.3(Sun)		Data arrangement ^(A,B,C)	Yerevan ^(A,B,C)
15	Oct.4(Mon)		Survey for Technical Cooperation Project ^(A,B) Survey for procurement ^(C)	Yerevan ^(A,B,C)
16	Oct.5(Tue)	Yerevan Vienna ^(C)	Survey for Technical Cooperation Project ^(A,B)	Yerevan ^(A,B) Flight ^(C)
17	Oct.6(Wed)	Narita ^(C)	Survey for Technical Cooperation Project ^(A,B)	Yerevan ^(A,B)

(A) Team Leader, (B) Technical Advisor, (C) Chief Consultant / Equipment Planner 1

Appendix-3 List of Parties Concerned in the Recipient Country

Affiliation	Position & Specification	Name
Governmental Organizations		
Ministry of Foreign Affairs Department of Asia, Pacific & Africa	Director	Dr. Rouben Karapetyan
	Acting Head	Mr. Gagik Ghalachyan
	Head	Mr. Michael Vardanian
		Ms. Hrachuhi Katvalyan
East Asia & Africa Division Department	Head	Mr. Yuri Petrusyan
Ministry of Health Department of International Relations	Director	Mr. Michael Vardanian
International Organizations		
USAID Democracy & Social Reform Office	Health Advisor	Dr. Emily Sherinian
	Project Management Specialist	Dr. Anna Grigoryan
The World Bank	Director	Dr. Sergey Khachatryan
UNICEF	Health and Nutrition Project Assistant	Dr. Mihran Hakobyan
UNFPA	Assistant Representative	Mr. Karen Daduryan
GTZ	Programme Coordinator	Dr. Vardan Aznauryan
Target Hostitals		
Center of Perinatology, Obstetrics and Gynecology (CPOG)	Director	Prof. Razmik Abrahamyan
	Laparoscope Dev.	Dr. Vahe Gyulkhasyan
	Diagnosis Dev.	Dr. Gayane Avetisyan Dr. Anna Khudaverdyan
	Neonatal Dev.	Dr. Arshak Gerjeryan
	Lab Dev.	Dr. Vahan Vardapetyan Dr. Andranik Poghosyan
	Family Planning Dev.	Dr. Aram Shahbaz
Gaver Maternal Hospital	Director	Dr. Hovhannes Chichoyan
Hrazdan Maternal Hospital	Director	Dr. Henrik Nariwauyan
Other Medical facilities and Organizations		
Republican Medical Center "ARMENIA"	Director	Prof. Grigor Grigoryan
Infection Diseases Clinical Hospital "Nork"	Director	Dr. Ara Asoyan
"Sourb Astvatsamayr" Medical Center	Director	Dr. Nikolay Dallakyan
Agencies of Medical Equipment		
Pharmster	President	Mr. Ivan Tarlykov
VIOLA	General Manager	Dr. Armen Mezhlumyan
OLYMPUS MOSCOW	Special Project Manager	Mr. Timur Gorshunov
PINK FLAMINGO MEDICAL LTD	General Manager	Mr. Melsik Baghdasarian
HOSPITEX DIAGNOSTICS MOSCOW	Area Manager	Mr. Konstantin Konstantinov
DIASERV LTD	President	Mr. Khachik Haroutunyan
Transportation Companies		
ABAR Co Ltd	Manager	Mr. Hajkaz Balyan
ARMENTRANSFORWARDER LTD	Director	Mr. Sergey Sumbatlan
Sati	Managing Director	Mr. Makar Arakelyan
TRANS-ALLIANCE LTD	General Director	Mr. Sargis Martirosyan
TRANSIMPEX	Head of Freight Forwarding Department	Mr. Georgi Danielyan

Appendix-4 Minutes of Discussion

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR IMPROVEMENT OF OBSTETRICAL SERVICE
IN THE REPUBLIC OF ARMENIA

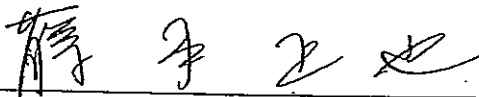
In response to a request from the Government of the Republic of Armenia (hereinafter referred to as "Armenia"), the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of Obstetrical Service in Armenia (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to the Armenia the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Masaya FUJIMOTO, Team Leader, Health Team, Project Management Group III, Grant Aid Management Department, JICA, and is scheduled to stay in the country from June 23 to June 29, 2004.

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

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

Yerevan, June 28, 2004



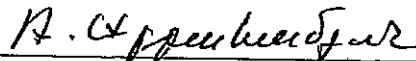
Mr. Masaya Fujimoto
Leader
Basic Design Study Team
Japan International Cooperation Agency



Dr. Hayk Grigoryan
Director
Department of International Relations
Ministry of Health



Mr. Michael Vardanian
Head of Pacific Division
Asia-Pacific & Africa Department
Ministry of Foreign Affairs



Prof. Razmik Abrahamyan
Director
Center of Perinatology, Obstetrics and
Gynecology

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve obstetrical service in Armenia through improving the medical equipments.

2. Project Sites

- Center of Perinatology, Obstetrics and Gynecology (CPOG)
- Gavar Maternal Hospital
- Hrazdan Maternal Hospital

3. Responsible and Implementing Agency

3-1. The responsible agency is the Ministry of Health.

3-2. The implementing agency is CPOG, Gavar Maternal Hospital and Hrazdan Maternal Hospital.

4. Items Requested by the Government of Armenia

After discussions with the Team, the items described in Annex-1 were finally requested by the Armenian side. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval. Final components for the implementation of the Project will be decided based on the further analysis in Japan.

5. Japan's Grant Aid Scheme

5-1. The Armenian side understands the Japan's Grant Aid Scheme explained by the Team, as described in Annex-2.

5-2. The Armenian side will take the necessary measures, as described in Annex-3, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

6. Schedule of the Study

6-1. The consultants will proceed to further studies in the Armenia until July 19, 2004.

6-2. JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around the middle of September 2004.

6-3. In case that the contents of the report are accepted in principle by the Government of Armenia, JICA will complete the final report and send it to the Government of Armenia by the end of January 2005.

7. Other Relevant Issues

7-1. Both sides reached a close consensus on the effectiveness of the linkage between Grant Aid and Technical Cooperation Project.

7-2. The Armenian side announced that the targeted facilities of the Project will not be integrated and/or privatized under current Health Care System Optimization Plan and that the functions of those facilities shall remain unchanged in the future.

7-3. The Armenian side promised to secure and allocate the necessary budgets and personnel to operate and maintain the equipment to be procured under the Project properly and effectively.

7-4. The team stressed the necessity to secure publicity effect for the Project. The Armenian side promised to take necessary measures for it.

7-5. To secure transparency and equity of the tendering procedure, Both sides promised not to disclose information related to the Project to the third parties until tender opening.

Annex-1: Equipment Lists

Annex-2: Japan's Grant Aid Scheme

Annex-3. Major Undertakings to be taken by Each Government

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Equipment List for Center of Perinatology, Obstetrics and Gynecology (CPOG)

No	Equipment
1	U.S (Color Doppler) with Necessary Probes
2	Fetal Doppler
3	ECG
4	Colposcope with Camera
5	Scales for Adult (Weight and Height)
6	Sphygmomanometer with Infant and Adult Cuff
7	Biochemical Analyzer
8	Coagulometer
9	Electrolytes Analyzer
10	Refrigerator for Drug Storage
11	Refrigerator for Blood Storage
12	Plasma Freezer
13	Examination Lamp
14	Operation Table
15	OT Lamp
16	Patient Monitor for OT
17	Anesthetic Unit
18	Electrosurgical Unit
19	Instrument Set for Obstetric Surgery
20	Laparoscope Set
21	Suction Unit
22	Stretcher
23	Obstetrical Bed
24	Infant Warmer
25	Fetal Monitor
26	Electronic Weight Scales for the Newborn
27	Gynecological Examination Chair
28	ICU Bed
29	Patient Monitor for ICU
30	Infusion Pump
31	Ventilator
32	Infant Incubator
33	Transport Infant Incubator
34	Patient Monitor for NICU
35	Pulse Oximeter
36	Phototherapy Unit
37	Bilirubin Meter
38	Emergency Care Set for NICU
39	Infant Ventilator
40	Steam Sterilizer
41	Hot Air Sterilizer
42	Washing Machine
43	Ironer
44	Two Crank Bed
45	Bassinet

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6

Equipment List for Gavar Maternal Hospital and Hrazdan Maternal Hospital

No	Equipment
1	U.S (B/M Mode) with Necessary Probes
2	Mobile U.S with Convex Probe
3	Fetal Doppler
4	ECG
5	Sphygmomanometer with Infant and Adult Cuff
6	Operation Table
7	Anesthetic Unit
8	Pulse Oximeter
9	Instrument Set for Obstetric Surgery
10	Obstetrical Bed
11	Fetal Monitor
12	Infant Warmer
13	Infant Incubator
14	Patient Monitor for Neonate
15	Infusion Pump
16	Phototherapy Unit
17	Bilirubin Meter
18	Electronic Weight Scales for the Newborn
19	Emergency Care Set for Neonate Care
20	Gynecological Examination Chair
21	Patient Monitor
22	Sterilizer

M.V.

Japan's Grant Aid Scheme

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure the Hospitals; equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of material as such.

1 Grant Aid Procedures

(1) The Japan's Grant Aid Scheme is executed through the following procedures.

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

- (2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct the Study on the request.
- Secondly, JICA conducts the Study (Basic Design Study), using (a) Japanese consulting firm(s).
- Thirdly, the Government of Japan appraises the Project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.
- Fourthly, the Project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the recipient country.
- Finally, for the smooth implementation of the Project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2 Basic Design Study

(1) Contents of the study

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

- 1) Confirmation of the background, objectives, and benefits of the requested Project and also institutional capacity of agencies concerned of the recipient country necessary for

the Project's implementation.

- 2) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view.
- 3) Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
- 4) Preparation of a Basic Design of the Project
- 5) Estimation of costs of the Project

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

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Study, JICA uses (a) registered consultant firm(s). JICA select (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry (ies) out Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

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

3 Japan's Grant Aid Scheme

(1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the Hospitals, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

(2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

(3) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedures such as exchanging of the Notes,

concluding contracts with (a) consultant firm(s) and (a) contractor(s) and final payment to them must be completed.

However in case of delays in delivery, installation or construction due to unforeseen factors such as whether, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

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

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

However the prime contractors, namely, consulting constructing and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

- (5) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals.

Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability to Japanese taxpayers.

- (6) Undertaking required of the Government of the Recipient Country

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

- 1) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction.
- 2) To provide Hospitals for the distribution of electricity, water supply and drainage and other incidental Hospitals in and around the sites.
- 3) To secure buildings prior to the procurement in case the installation of the equipment.
- 4) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid.
- 5) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts.
- 6) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such Hospitals as

may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(7) "Proper Use"

The recipient country is required to maintain and use the Hospitals constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

(8) "Re-Export"

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

(9) Banking Arrangements (B/A)

- 1) The Government of the recipient country or its designated authority should open an account in the name of Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- 2) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an authorization to pay issued by the Government of the recipient country or its designated authority.

Major Undertakings to be taken by Each Government

No	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To bear the following commission to the Japanese foreign exchange bank for the banking services based upon B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
2	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption (including internal tax) and custom clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the Project site	●	
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		●
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts.		●
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant.		●
6	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment.		●

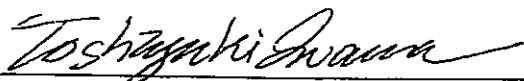
**MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR IMPROVEMENT OF OBSTETRICAL SERVICE
IN THE REPUBLIC OF ARMENIA
(EXPLANATION ON DRAFT REPORT)**

In June 2004, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Basic Design Study Team on the Project for Improvement of Obstetrical Service in Armenia (hereinafter referred to as "the Project"), and through discussion, field survey and technical examination of the results in Japan, JICA prepared draft report of the Study.

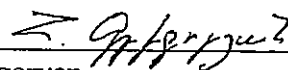
In order to explain and to consult the Government of Armenia (hereinafter referred to as Armenia ") on the components of the draft report, JICA sent to Armenia the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Toshiyuki IWAMA, Deputy Resident Representative, UK Office, JICA, from September 21 to October 5, 2004.

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

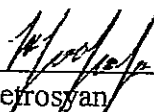
Yerevan, October 2, 2004



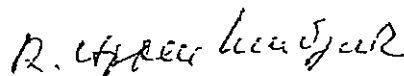
Mr. Toshiyuki Iwama
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Japan International Cooperation Agency



Dr. Hayk Grigoryan
Director
Department of International Relations
Ministry of Health



Mr. Yuri Petrosyan
Head of East Asia & Africa
Division Department
Ministry of Foreign Affairs



Prof. Razmik Abrahamyan
Director
Center of Perinatology, Obstetrics and
Gynecology

ATTACHMENT

1. Components of the Draft Report

The Armenian side agreed and accepted in principle the components of the draft report explained by the Team. The items described in Annex1 were finally requested by the Armenian side. JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval. Final components for the implementation of the Project will be decided based on the further analysis in Japan.

2. Japan's Grant Aid Scheme

The Armenian side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by The Armenian side as explained by the Team and described in Annex-2 and Annex-3 of the Minutes of Discussions of the Basic Design Study signed by both parties June 28, 2004.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Armenia by January 2005.

4. Other Relevant Issues

- 4-1. The Armenian side is responsible for allocating the enough budget and personal staff for the operation and maintenance of the equipment provided by the Project.
- 4-2. Both side confirmed that the targeted facilities of the Project will not be requidated and/or sold to the private sector under current Health Care System Optimization Plan and that the function of those facilities shall remain unchanged in the future.
- 4-3. To secure transparency and equity of the tendering procedure, both sides promised not to disclose information related to the Project to the third parties until tender opening.

Annex1: Equipment Lists

Equipment List for Center of Perinatology, Obstetrics and Gynecology (CPOG)

No	Equipment	Qty.
1	U.S (Color Doppler) with Necessary Probes	2
2	Fetal Doppler	5
3	ECG	3
4	Colposcope with Camera	2
5	Scales for Adult (Weight and Height)	3
6	Sphygmomanometer with Infant and Adult Cuff	6
7	Biochemical Analyzer	1
8	Coagulometer	1
9	Electrolytes Analyzer	1
10	Refrigerator for Drug Storage	1
11	Refrigerator for Blood Storage	1
12	Plasma Freezer	1
13	Examination Lamp	5
14	Operation Table	3
15	OT Lamp	2
16	Patient Monitor for OT	2
17	Anesthetic Unit	3
18	Electrosurgical Unit	3
19	Instrument Set for Obstetric Surgery	2
20	Laparoscope Set	1
21-1	Suction Unit for OT	4
21-2	Suction Unit (Low pressure)	3
22	Stretcher	4
23	Obstetrical Bed (LDR type)	4
24	Infant Warmer	9
25	Fetal Monitor	2
26	Electronic Weight Scales for the Newborn	6
27	Gynecological Examination Chair	4
28	ICU Bed	6
29	Patient Monitor for ICU	6
30	Infusion Pump (syringe type)	22
31	Ventilator	1
32	Infant Incubator	5
33	Transport Infant Incubator	2
34	Patient Monitor for NICU	3
35	Pulse Oximeter	2
36	Phototherapy Unit	2
37	Bilirubin Meter	2
38	Emergency Care Set for NICU	2
39	Infant Ventilator	1
40	Steam Sterilizer	2
41	Hot Air Sterilizer	5
42	Washing Machine	1
43	Ironer	1
44	Two Crank Bed	30
45	Bassinet	30

Equipment List for Gavar Maternal Hospital

No	Equipment	Qty.
1	U.S (B/M Mode) with Necessary Probes	1
2	Mobile U.S with Convex Probe	1
3	Fetal Doppler	3
4	ECG	1
5	Sphygmomanometer with Infant and Adult Cuff	2
6	Operation Table	1
7	Anesthetic Unit	1
8	Pulse Oximeter	1
9	Instrument Set for Obstetric Surgery	1
10	Obstetrical Bed (LDR type)	2
11	Fetal Monitor	1
12	Infant Warmer	2
13	Infant Incubator	2
14	Patient Monitor for NICU	1
15	Infusion Pump (syringe type)	6
16	Phototherapy Unit	1
17	Bilirubin Meter	1
18	Electronic Weight Scales for the Newborn	1
19	Emergency Care Set for NICU	1
20	Gynecological Examination Chair	2
21	Patient Monitor for ICU	1
22	Sterilizer	1

Equipment List for Hrazdan Maternal Hospital

No	Equipment	Qty.
1	U.S (B/M Mode) with Necessary Probes	1
2	Mobile U.S with Convex Probe	1
3	Fetal Doppler	3
4	ECG	1
5	Sphygmomanometer with Infant and Adult Cuff	3
6	Operation Table	1
7	Anesthetic Unit	1
8	Pulse Oximeter	1
9	Instrument Set for Obstetric Surgery	1
10	Obstetrical Bed (LDR type)	2
11	Fetal Monitor	1
12	Infant Warmer	2
13	Infant Incubator	2
14	Patient Monitor for NICU	1
15	Infusion Pump (syringe type)	6
16	Phototherapy Unit	1
17	Bilirubin Meter	1
18	Electronic Weight Scales for the Newborn	1
19	Emergency Care Set for NICU	1
20	Gynecological Examination Chair	2
21	Patient Monitor for ICU	1
22	Sterilizer	2

Appendix-5 References

	Name	☛Publisher	Year
1	Republic of Armenia: Poverty Reduction Strategy Paper	International Monetary Fund	2003
2	National Health Policy of the Republic of Armenia 2004-2015	Ministry of Health	2003
3	The Strategy of Health protection of mother and child for 2003-2015	Ministry of Health	2004
4	The order of rendering of the free-of-charge obstetric-gynecologic aid to the population guaranteed by the state	Ministry of Health	2004
5	The Framework of the program of Optimization of establishments of Public Health Service of Yerevan	Ministry of Health	2004
6	Highlights on Health in Armenia	WHO	2001
7	Health Care Systems in Transition Armenia	European Observatory on Health Care Systems	2001
8	Initial Project Information Document (PID)	The World Bank	2003
9	Armenia Demographic and Health Survey 2000	Ministry of Health	2001